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ABSTRACT

Presented is an abstract of a lecture-workshop presentation on vision problems and their relation to learning, working, living, and health. Areas covered by the author in his lecture are outlined as including the essential tests of the primary vision examination; the value of testing depth perception at the reading distance; the testing and care of visual defects not correctable by glasses; and the need for laboratory courses in vision in the schools. Included are a sample form for reporting results of an eye, vision, and visual perception examination and a list of definitions for terms used in vision testing and training. A chapter on the practice of orthoptics and related subjects taken from the author's textbook makes up more than half of the document and includes information on such topics as the effects of visual handicaps on learning, the practice of refraction, and the abolishment of "quickie" eye care. (SB)

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VISION PROBLEMS AND THEIR RELATION TO LEARNING, WORKING, LIVING AND HEALTH

By

BERNARD E. VODNOY, OD., DOS., FAAO

A Lecture-Workshop

Presented At The CEC Convention

On April 8, 1976

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Material ahead of green divider sheet apply specifically to my Lecture-Workshop at the CEC Convention. Materials following the green sheet are from my textbook.

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ABSTRACT of
"VISION PROBLEMS AND THEIR RELATION TO LEARNING, WORKING, LIVING AND HEALTH"
A Lecture-Workshop presented at the CEC Convention on April 8, 1976
By Bernard E. Vodnoy, OD., DOS., FAAO.

The author explained how poor vision, double vision, and the eyestrain from visual defects creates visual disability, discomfort, stress, tension, worry and pain and, thereby, are very serious deterrents and handicaps to reading, learning and working in all phases of living by people of all ages. He stated that the vast importance of eye strain is covered in the great treatise on eyestrain by Sir Duke-Elder, the world famous ophthalmologist, in the first chapter of his textbook, "THE PRACTICE OF REFRACTION", 8th Edition, (1969). He gave a reprint of this chapter to each person in attendance and urged that these pages be read by every school administrator, school nurse, teacher, and child psychologist, the many others concerned, and applied in their work and in their lives. He quoted from Duke-Elder, "...of all the ailments which interfere with the smooth running of the human machine, eye-strain in one form or another is one of the most common. The importance of the relief of eyestrain in the health and happiness as well as in the economic value of the individual, is now widely recognized. The ill-advised statements of a few should not result in our ignoring the fact that errors of refraction (need of glasses), more specifically of small amount, anomalies of accommodation (focusing) and convergence (turning the eyes inward to look at near), and lack of balance between the extrinsic ocular muscles (eye-turning muscles), are the unsuspected cause of much discomfort. Too often in the diagnosis of such cases the ocular cause of the trouble is neglected, or thought of ultimately as a last expedient when frequently it should have been considered and remedied first".

The author maintains that there is a great need for these lecture-workshops, that many people in education have become critically aware of the great importance of the effects of vision handicaps on learning; now they urgently need and want, in-depth, factual information on the field of vision care. The author answers this

need by EXPLAINING AND/OR DEMONSTRATING:

I. THE IMPORTANT TERMS USED IN VISION TESTING AND TRAINING to facilitate the vision specialist, educator and parents working together for the good of the child. We must build discourse between these three groups.

II. THE ESSENTIAL TESTS WHICH SHOULD COMPRISE THE PRIMARY VISION EXAMINATION so the parents and educator will know if the child has had an adequate vision examination.

III. THE SPECIAL TESTS which may also be necessary with many persons being examined in order for the doctor to more fully understand the child's visual handicaps.

IV. THE PUBLIC MUST BE MADE AWARE OF THE EXISTENCE AND TREMENDOUS SIGNIFICANCE OF THE RETINOSCOPE, (A) THAT IT IS ONE OF THE MOST VITAL, VALUABLE INSTRUMENTS EVER DEVELOPED FOR THE CARE OF VISION, and that through its use, the examiner CAN determine the optical error of the eye WITHOUT ASKING ANY QUESTIONS, (B) therefore, every child should be examined in a professional office, with a retinoscope (and other techniques) as soon as he will sit still on his parent's lap and cooperate, (C) parents MUST NOT WAIT UNTIL THE CHILD STARTS KINDERGARTEN or later, and then depend upon a school screening examination to determine if their child needs visual care. SUCH PROCRASTINATION MAY BE VERY TRAGIC TO THEIR CHILDS'S VISION AND LIFE.

V. THE BASIC CAUSE OF APPARENTLY POOR GROSS MOTOR COORDINATION MIGHT be double vision resulting from cross-eyedness or a shifting in depth perception due to periodic cross-eyedness, etc. and not inadequacies in the gross motor system.

VI. THE VALUE OF TESTING THE DEPTH PERCEPTION AT THE READING DISTANCE with the Polaroid 3-D Test.

VII. THE VALUE OF TESTING BINOCULAR VISION WITH THE RED-GREEN LANTERN.

VIII. THE FOLLOWING STATEMENTS SHOULD BE UNDERSTOOD IN DEPTH BY EDUCATION.

A. We MUST NOT use common sense alone in guiding us in the care of vision, for without the essential scientific facts we can go far astray and make

some very serious errors in the care of our children's (and our own) vision

B. A student who is blind in one eye and has only 20/40 in the remaining eye may have no visual handicap in reading and learning; however, a student with binocular vision, 20/20 in each eye and does not need glasses may be a serious visual cripple!

C. The strength of the corrective lenses does not indicate the strength of the eyes or vision.

D. A perfect spectacle prescription does not insure perfect or comfortable vision.

E. Eye exercises are a great deal more than just rolling the eyes to strengthen the eye muscles.

F. Lenses are not crutches; if lenses are needed, the eyes are more "normal" when the glasses are being worn.

G. Explanation of some symptom-creating problems arising from a tight linkage of the focusing and fusion mechanisms.

H. Detrimental effects on binocular vision, from a need for unequal lens powers for each eye, if glasses are not worn, explains the need for weak lenses by some people.

IX. A VERY IMPORTANT AREA IN THE PRACTICE OF VISUAL CARE IS IN TESTING AND CARE OF THE VISUAL DEFECTS WHICH ARE NOT CORRECTABLE BY GLASSES (THE NON-REFRACTIVE ANOMALIES). Glasses correct dificiencies like farsightedness, nearsightedness, astigmia, need for reading glasses or bifocals (the Refractive Anomalies), etc. It is very important that if glasses are prescribed, the examination and glasses should be done in accordance with the highest standards. "Quickie" care must be avoided, indeed abolished. Visual Training is usually essential to correct deficiencies like crossed or divergent eyes, amblyopia (lazy eye), suppression, (the act of ignoring one eye when both eyes are open), TENDENCY of the eyes to cross or diverge at far or near or both, lack of ability to achieve fusion or good focus and obtain clear and single vision at various distances.

X. THE NEED FOR ORTHOPTICS (VISION TRAINING) TO CORRECT MOST OF THE VISUAL DEFECTS NOT CORRECTABLE BY GLASSES IS VERY GREAT. In an average practice, approx. 300 patients per year would need orthoptics. Approx. 95% of these would be non-crosseyed (or non-divergent) people. Approx. 75% of the young, trainable crosseyed (or divergent) persons, can achieve straight eyes by doing visual training. There are millions of people who are not crosseyed but have defects in their binocular vision; thru visual training all of these people can achieve normal single, binocular vision.

XI. THE BINOCULAR VISION SKILLS OF EVERY PATIENT SHOULD BE EXAMINED AND EVALUATED, and if any defects are detected they should be explained and corrected if possible. To do less than this is serious neglect. Schools who have been ignoring the defects of binocular vision, either with the crosseyed or non-crosseyed patient, should start immediately to help detect these persons and get them under orthoptic care. There are thousands of patients who are wearing their best possible glasses who are suffering needlessly from visual defects which are not correctable by glasses, but which may very likely be correctable by visual training.

XII. THE ORTHOPTIC PROGRAM. Instruments were set-up and each person put on Polaroid glasses, and red-green glasses so that they could actually experience these procedures.

A. The study of false fixation with a false visual center (false macula).

B. The correction of amblyopia (partial sight).

C. The relearning of normal hand and eye coordination and monocular skills.

D. The establishment of normal linkage between the eyes.

E. The development of normal binocular vision at the angle of cross-eyedness.

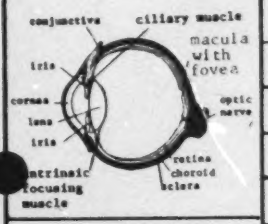
F. The development of depth perception and fusional movements.

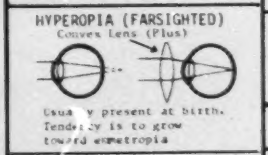
G. The testing and training of the reserves of binocular vision.

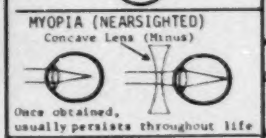
XIII. SCHOOLS AND THE VISION SPECIALIST HAVE GREAT CHALLENGES IN THIS FIELD AND SEVERAL CORRECTIVE MEASURES ARE URGENTLY NEEDED. Dr. Vodnoy urges that Laboratory Courses in vision be instituted in the elementary schools, high schools,

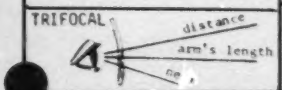
and colleges throughout the land which will illustrate and demonstrate: (1) the normal processes involved in obtaining and maintaining single binocular vision, (2) the defects of monocular and binocular vision, (3) the great importance of detecting these defects, (4) that these defects can be serious deterrents and handicaps to achievement in learning, working and living. These laboratory courses will also serve as a vital vision screening to reveal these defects. They should be used in classes of social studies, health classes, biology, physics, physiology, psychology and education.

A complete vision examination may be divided into six parts as shown on the enclosed "Report Of Vision Examination" form. The writer has developed his #203 Form over many years and has upgraded it many times. He fills in the pertinent test findings with a fine red felt pen, and gives it to the patient and/or parent and sends a copy to the school nurse, reading teacher, etc. He also sends along the page of "Definitions Of The Important Terms Used In Vision Testing And Training" to assist the lay readers in their understanding of the report form. He has found that it has opened up highly effective channels of communication with all these many important groups of people and has greatly increased his pediatric practice (and especially with children with learning disabilities). Educators should have sufficient training to thoroughly understand every entry on this report.









REPORT OF EXAMINATION OF THE EYES, VISION AND VISION PERCEPTION

Patient's Name	No.	Age	Date
Address		Home Phone Business Phone	
Parents	Referred By		

I. VISION Without Glasses	Far: Right 20/	Left 20/	Both 20/	Near: R. Pt.	L. Pt.	Both Pt.
Present Prescription	R.	Add	Far 20/	Near Pt.	PD Far	
	L.	Add	20/	Pt.	Near	

II. BALANCES OF THE OCULO-ROTARY MUSCLES BY COVER TEST AND OCULO-ROTARY MOVEMENTS

BALANCES: ( ) ESTIMATED: ( ) MEASURED WITH PRISMS.

Lateral Balance	Far	Near	Comitant (Eyes move together)____ Non-Comitant (Not together)			
Vertical Balance	Far	Near	Visual-Tactile with Non-Dominant eye			
Oculo-Rotary	Pursuit Movements Smooth____ Jerky	Saccadic Movements Normal____ Sub-Normal	Dominancy	Ocular	Hand	Foot

III. VISUAL FIELDS – INTRAOCULAR PRESSURE – BIOMICROSCOPY – EXTERNAL OCULAR – OPHTHALMOSCOPY

Physiological Blind Spots	R.	L.	Tangent R. Fields	L.	Pupillary Responses	Aniso-coria
Perimetry	R. Temp___ L.	Nasal___	Sup.___	Sup. Nasal___	Sup. Temp.___	Inf.___ Inf. Nasal___ Inf. Temp.___
Intraocular Pressure IOP	R. 5 gm.	7.5 gm.	10. gm.	Tonometer Used	Biomicro-scopy	R.____ L.____
Time of Day	L. 5 gm.	7.5 gm.	10. gm.	Digital R.___ I.O.P. L.___	Discom-fort	
External Ocular	R.____ L.					
Ophthal-moscopy	R. Cornea___ L.	Aqueous Humor___	Iris___	Crystalline Lens___	Vitrous Humor___	Optic Disc___ Macula___ Fundus___
Retinopathy Grid Study	R. Objec-___ L. tive	Subjec-___ tive				

IV. REFRACTIVE STUDY OF THE LENS PRESCRIPTION

Keratometry (Measurement of Corneal Curvatures)						
Retinoscopy-(Objective Refraction)					Vision-Far 20/___ 20/ 20/	Near Pt. Pt.
Subjective Refraction		Add	Prism	Base	20/___ 20/ 20/	Pt. Pt.

V. BINOCULAR VISION, FUNCTIONAL, AND PERCEPTUAL EXAMINATION

BALANCES OF THE OCULOROTARY MUSCLES - COMPENSATORY CONVERGENCE AND DIVERGENCE FUSIONAL RESERVES WITH THE PHOROPTER

Lateral Balance Far No Glasses >4		Fusional Convergence	Blur	Break	Recovery	Fusional Divergence	Blur	Break	Recovery
Lateral Balance Far With New Rx >4		<10/16/10				<6/4			
Vertical Balance Far >1½		Right Supra Duction				Right Infra Duction			
Lateral Balance Near Thru Distance Rx >6		Fusional Convergence				Fusional Divergence			
Lateral Balance Near Thru Near Rx >6		<10/16/10				<10/16/10			
Vertical Balance At Near >1½		Right Supra Duction				Right Infra Duction			

Amplitudes of Convergence	Objective N.P. Con. >4	Subjective N.P. Con. >4	Amplitudes of Accommodation	R. Accom. Near Pt.	L. Accom. Near Pt.	Both Eyes-Accom. Near Pt.
Accommodative Reserves	Positive Relative Accommodation <-1.50		Negative Relative Accommodation <+1.00		Facility of Accommodation	
Cross Cylinder	R. Monocular	L. Monocular	Binocular >+75	( )Some tests are poorer than values given Orthoptics: ( )Indicated ( ) Not Indicated		
Duochrome At Near	R. Monocular	L. Monocular	Binocular >+75	COMBINATION CASE RECORD & REPORT FORM Page 1 Form #203 7/74		

VI. STEREOPSIS AND COLOR PERCEPTION - STATUS BINOCULARITY AND MONOCULARITY - INTEGRITY OF MACULAR FUNCTION

Stereoscopic Perception	Stereo Fly Polaroid Book	Stereo Fly	Animal Test	Circle Test	Vectogram #11	Normal ___ Subnormal	Color Perception
Vectogram #12 Basic Fusion	Suppression Fixation Disparity	Fusional Convergence: Blur	Break	Recovery	Fusional Divergence: Blur	Break	Recovery
Vectogram #10 Full Field Fusion	Suppression Fixation Disparity	Blur	Break	Recovery	Blur	Break	Recovery
Vectogram #10 Prolonged Test		Blur	Break	Recovery	Blur	Break	Recovery
Fixation Disparity	Far	Near		Howard-Dolman Depth Perceptor	Far	Near	
Suppression Red-Green Lantern	Far	Near		Amblyopia R. L.	Mild ___	Moderate ___	Severe ___
Physiological Diplopia	Homonymous	Heteronymous		Anisokonia Unequal Images			
Anisophoria Anisotropia	Vertical ___ Horizontal	A__, V__, Y__, Λ__, X__. Syndrome					
Eccentric Fix. Haidinger Brush	R. ___ Fixation L. Normal	Fixation ___ Unstable	False Macula ___ Non-Imbedded	False Macula ___ Imbedded			
Eccentric Fix. Visuscopy	R. ___ Fixation L. Normal	Fixation ___ Unstable	False Macula ___ Non-Imbedded	False Macula ___ Imbedded			
Retinal Correspondence	Normal ___ Abnormal	Harmonious ___ Unharmonious	Striated Glass Test Vectogram #	Other Test			
Rudimentary Binocularity	Color Fusion	Retinal Rivalry	Simultaneous Perception				

VII. VISION THERAPY (VISUAL TRAINING, ORTHOPTICS, VISUAL-PERCEPTUAL TRAINING)

( ) NOT INDICATED; ( ) TO BE CONSIDERED; ( ) PRESCRIBED.

Orthoptic Goals Are:

( ) Correction of false macula. (Anomalous Monocular Projection)

( ) Improve hand & eye coordination. (Visual Tactile).

( ) Correction of linkage between the eyes.

( ) Improve eye movements ( ) Pursuit; ( ) Saccadic.

( ) Acuity of vision (Amblyopia Correction).

( ) Improve simultaneous binocular perception.

( ) Eliminate suppression. (Avoidance of Binocular Perception)

( ) Improve fusion ( ) Far: ( ) Near:

( ) Improve balance of (extrinsic) eye-turning muscles: ( ) Far; ( ) Near.

( ) Correct fixation disparity.

( ) Improve accommodation (intrinsic) muscles. (Focusing Ability)

( ) Improve near point of convergence.

( ) Improve fusional convergence reserve. ( ) Far; ( ) Near

( ) Improve fusional divergence reserve. ( ) Far; ( ) Near

( ) Accommodation-Convergence-Coordination.

( ) Improve depth perception (stereopsis).

( ) Improve visual-perceptual motor skills.

( ) Examination reveals visual deficiencies which may act as barriers to visual perception and may have a relationship:
( ) To eye strain and discomfort
( ) To general living, performance and achievement
( ) To school performance and achievement
( ) Home Orthoptics (Visual Therapy) Prescribed

Number Times Per Day		Duration Of Each Period		
Report For Each Period:	Date / Time Of Day	Time Trained	Achievement	Remarks
Mail Report	Phone Report	Next Orthoptic Office Visit		
No Glasses required	Present Rx all right	Glasses need changing	New glasses prescribed	
Hyperopia R__ Farsighted L	Myopia ___ Nearsighted	Astigmia ___	Emmetropia ___ (No error)	
Isometropia Equal error	Anisometropia Unequal errors	Antimetropia Opposite error	Significant Non-significant	
Strength Of Lenses	Mild R. L.	Moderate R. L.	Strong R. L.	
Orthoptic Instrumentation prescribed				

Photophobia (Light Sensitivity)	Indoors	Outdoors	Anti-Reflection Coating Needed
__Rx Constant Wear Rx Part Time Wear	__Not For Active Play Wear As Needed	___ Far Only Near Only	

___Rx Retinoscopy ___Rx Subjective | Full Rx ___Partial Rx | ___Rx Other

Right Rx:

Left Rx:

Single Vision	___Glass ___Plastic	Heat Treat Chem Hard	Cx Toric Cc Toric	White Tint
Bifocal		Tri-Focal		

Seg Height R. L.	Segment Width	Monocular Pd's R. L.	Anti-Reflection Coating
Frame And Color			Lens Size
DBL	Temple Style	Temple Length R. L.	Lens Shape

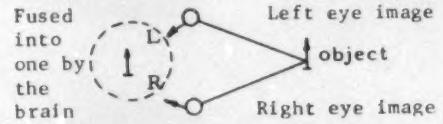
Additional Comments: Fees:

NAME OF EXAMINER: PHONE:

ADDRESS:

DEFINITIONS OF IMPORTANT TERMS USED IN VISION TESTING AND TRAINING FOR USE BY PATIENTS

FUSION. When looking at an object, an image of that object is created in each eye; therefore, presented to the brain are two images of each single object in space. If these images are united into a single image, FUSION is obtained.



SINGLE BINOCULAR VISION. The attainment of single vision through the use of both eyes; it is the end result of fusion.

MONOCULAR VISION. The vision resulting from the use of one eye only.

STEREOPSIS (Syn: Depth perception, 3D Vision). When single binocular vision is attained of an object which has three dimensions (height, width and depth), the right eye image is somewhat unlike the left eye image. The right eye sees more of the left side and the left eye sees more of the right side of the object. If these dissimilar images are fused, the person has a much greater ability to perceive the solidity or depth of the object than they can obtain with monocular vision. This achievement is termed STEREOPSIS. Upon looking into space (with single, binocular, stereoscopic vision) at several separate objects located at different distances, the air space between the objects "opens up". There is a great enhancement of the ability to judge the distance of each object, the separation between the objects, and the solidity of each individual object.

SUPPRESSION. If there are deficiencies in the visual mechanism which makes fusion difficult, the person may ignore one of the images and thereby still see single, in spite of the fact that images had been created in BOTH eyes and were transmitted to the brain for perception. This act is termed SUPPRESSION.

PHYSIOLOGICAL DIPLOPIA. Normally the object being observed directly is single; objects in front and behind this object are seen double (DIPLOPIA). Usually no attention is paid to this double vision; however, people with normal binocular vision can very easily elicit this type of diplopia.

ACCOMMODATION. This is the act of changing the focus inside the eye so as to obtain clear vision when the gaze is shifted from one distance to another. This is accomplished through changing the curvatures of the focusing lens of the eye which lies just behind the iris. It is accomplished thru a combination of nerves and the ring-shaped muscle that surrounds the periphery of the focusing lens.

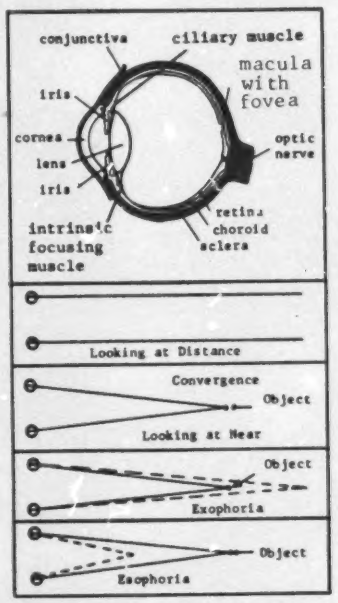
CONVERGENCE. In order to look at near and obtain single binocular vision, the eyes must be turned inward. Since the visual axes converge and meet at the object of regard, this act is called CONVERGENCE.

ACCOMMODATION-CONVERGENCE CONDITIONING (OR ASSOCIATION). When the gaze is changed from far to near, both accommodation and convergence are used simultaneously. They thereby become linked and act together, so that if one acts, the other also acts.

PRESBYOPIA (maturing vision). In youth, the focusing lenses of the eyes are very elastic; most children can focus objects even three inches from their nose. As we grow older, the focusing lenses gradually lose their elasticity and at 38 to 45 years of age difficulty is experienced in increasing the lens curvatures to enable us to focus at near. This condition is called PRESBYOPIA.

ORTHOPHORIA AT FAR (ortho, correct; phoria, tendency). There are six muscles attached to the outside of each eyeball to accomplish the turning of the eyes. When looking straight ahead at a long distance the supply of nervous energy to these muscles should be "in" balance so that the visual axes do not tend to turn away from parallelism; this is called ORTHOPHORIA.

HETEROPHORIA (hetero, different; phoria, tendency). The supply of nervous energy to the extra-ocular muscles is out of balance; however, the person can overcome it and still maintain approximately normal, single binocular vision. The ocular neurological imbalance is, therefore, referred to as being LATENT.



Extrinsic (eye turning) muscles are outside the eye.

ESOPHORIA AT FAR. A tendency of the eyes to cross ahead of the distant object of regard.

EXOPHORIA AT FAR. A tendency of the eyes to turn outward from the distant object of regard.

HYPERPHORIA. A tendency of one eye to turn above the other.

ORTHOPHORIA AT NEAR. The eyes do not tend to converge ahead or relax behind the near object.

ESOPHORIA AT NEAR. Convergence tends to overact and meet ahead of the near point object.

EXOPHORIA AT NEAR. Insufficiency in convergence. The eyes tend to turn outward from the near object.

FUSIONAL CONVERGENCE RESERVE. The ability to converge the eyes ahead of the plane of regard and maintain or recover fusion; the compensatory mechanism for exophoria.

FUSIONAL DIVERGENCE RESERVE. The ability to diverge the eyes behind the plane of regard and maintain or recover fusion; the compensatory mechanism for esophoria.

HETEROTROPIA. The imbalance is apparent and is termed MANIFEST. (Syn: strabismus, squint). In a very small number of cases, the cause may be weak muscles due to underdevelopment or injury thru disease or accident.

ESOTROPIA (eso, in; tropia, turn). The eyes are actually crossed.

EXOTROPIA (exo, out; tropia, turn). The eyes are actually divergent.

HYPERTROPIA. One eye is actually turned above the other.

ACCOMMODATIVE STRABISMUS. In moderate to high hyperopia (farsightedness), an excessive amount of accommodation is used to see even distant objects clearly. Because of the association to convergence, convergence responds in excess and the eyes become crossed; lenses must be worn constantly for they aid greatly in straightening the eyes. Bifocals are sometimes prescribed in these cases because they materially reduce the over-convergence at near and enable the child to learn fusion at near.

DIOPTER. The unit of measure for lenses. A one diopter lens has a focal length of one meter or 40". A two diopter lens has a focal length of 20". A three diopter lens has a focal length of 13", etc.

HYPEROPIA (Farsightedness). With accommodation relaxed, the rays of light from the distant object strike the retina before coming to a focus. Accommodation must be used to see clearly at distance and never has a chance to rest. Frequently, lenses must be worn to allow clear vision without undue strain of the accommodation; the young hyperopic person may not see more sharply through their lenses. If lenses must be prescribed or increased, exophoria may be created or increased, discomfort results and orthoptics must be undertaken.

EMMETROPIA (Free of optical error). With accommodation relaxed, the rays of light from the distant object come to a perfect focus on the retina.

MYOPIA (Nearsightedness). The rays of light from a distant object come to a focus in front of the retina; vision without glasses is better at near than at far. Children or teenagers must be checked at least once a year and in many cases, every six months. Frequently, if lenses must be prescribed or increased in power to attain clear distance vision, esophoria is created or increased, and although the person sees more clearly he is more uncomfortable and orthoptics must be undertaken.

EMMETROPIZATION. Most children are born hyperopic. As they grow, the hyperopia usually decreases gradually toward emmetropia. This process is referred to as emmetropization. If the child's eyes grow past emmetropia, they become myopic (nearsighted). Children, who reach low hyperopia or emmetropia before the age of 15, should be watched even more carefully to detect the onset of myopia.

ASTIGMATISM (or astigmia). The rays of light from a point do not focus as a point because the surfaces of the cornea or lens are not spherical.

ANISEIKONIA. The images perceived of an object through each eye are different in size or shape.

ISOMETROPIA. The optical error is the same in both eyes.

ANISOMETROPIA. Although both eyes are nearsighted or both are farsighted, the optical errors of the eyes are unequal. The accommodation muscles in both eyes are linked innervationally (called CONSENSUAL ACCOMMODATION) so that they cannot exert a different amount of effort to overcome unequal optical errors; therefore during binocular vision, one eye will always be out of focus and will thereby deteriorate binocular vision.

ANTIMETROPIA. One eye is nearsighted and one is farsighted.

AMBLYOPIA. Subnormal vision due to underdevelopment, disease, or injury to the eye, optic nerve, or brain.

AMBLYOPIA EX ANOPSIA. Dimness of vision due to suppression of the macular images from the conscious mind.

MACULA. The tiny area in the back of the retina in which the nerve endings are more tightly packed than anywhere else in the retina, and thru which normally the power to discriminate details is very keen.

FOVEA. The fovea is a tiny spot in the center of the macula through which the sharpness of vision is at its absolute maximum. When a person wishes to look at an object directly, and see it as clearly as possible, he must turn each eye so that the image of the object is upon the fovea.

HAIDINGER BRUSHES. An appearance of a spinning propeller when one fixates a slowly revolving polaroid plate through deep blue glasses. It can only be seen by the macula.

VISUAL AXIS. The main line of sight which extends from the fovea to the point of regard.

VISUAL ACUITY. The ability to perceive detail. Although vision is 20/20 in each eye and the person can read the smallest print at near, it is NO proof he has comfortable and efficient, normal binocular vision.

NORMAL RETINAL CORRESPONDENCE (NRC). The foveas and other corresponding areas of the two retinas are linked together so that when the images of an object fall upon them, fusion is achieved.

ABNORMAL RETINAL CORRESPONDENCE (ARC). There is a disruption of the above and the patient reports that he is using the fovea of one eye together with a retinal area in the indirect field of his other eye.

FIXATION. The act of turning the eye in order to place the image of the object of regard upon the macula.

FIXATION DISPARITY. Precise fixation with both foveas is not maintained under binocular vision; it may be in one eye only or divided between the eyes. It may be related to loss in stereopsis and/or suppression.

ECCENTRIC FIXATION. Fixation of the image of the object of regard with a false macula.

DIRECT FIELD OF VISION. The portion of the field which is seen by the macula.

PARA-MACULAR FIELD OF VISION. The portion of the field which is immediately adjacent to the macula.

INDIRECT FIELD OF VISION. The area outside the para-macular field.

PHYSIOLOGICAL BLIND SPOT. The normal blind spot in the field of vision is approximately 3° wide and 5° high It is created in the area in the back of the eye through which the optic nerve enters. There are no nerve endings of the optic nerve exposed in this area and, therefore, it is blind.

GLAUCOMA. A very infrequent disorder in which the pressure in the eye is above normal limits. It is detected by (a) the study of symptoms, (b) loss of vision, (c) examination of the exterior and interior of the eye, (d) enlargement of the physiological blind spot and blind or dim areas in the peripheral fields. Since it occurs mainly after 40 years of age, these persons should have a yearly examination.

TANGENT FIELD TEST. The patient looks with one eye at a fixation target in the center of a black, square screen and the test for (d) above is performed.

TONOMETER. This instrument is touched very lightly against the white of the eye (sclera) or the cornea and the internal eye pressure is measured.

PHOTOPHOBIA. Discomfort arising from exposure to light. It varies greatly from one person to another; the degree of absorption must be determined individually for each person. INDOORS, it is intensified by exposed light bulbs, glare off highly-polished, reflecting surfaces, and direct or reflected sunlight entering through unshaded windows. OUTDOORS, it is intensified by bright sunlight and is more severe where vegetation is sparse or at beaches, on the water, etc. In lenses with strong prescriptions, the absorption can be achieved by a coating on white lenses; this eliminates the variation in absorption from the center to the edge of the lens. Non-tinted lenses diminish the light by reflection. INDOORS, a small amount of additional absorption may be needed. OUTDOORS, most patients prefer a neutral, dark grey lens; patients with moderate light sensitivity prefer approximately 70% absorption; patients with marked light sensitivity prefer approximately 80% absorption. These prescription sunglasses are of great value to practically all patients.

ANTI-REFLECTION COATING. A microscopically thin, colorless (or colored) coating which is bonded to the glass and greatly eliminates the secondary or ghost images seen alongside of light bulbs, car headlights, street lights, or reflections off spectacle lenses. It is of vast value to many patients.

GENERAL OPTOMETRIC PRACTICE
SUBNORMAL VISION CARE

CONTACT LENSES
VISION TRAINING

BERNARD E. VODNOY, OD, DOS, FAAO.
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SOUTH BEND, INDIANA 46617

TELEPHONE 234-0370

TO: ALL PERSONS CONCERNED WITH VISION, ITS CARE AND ITS EFFECT ON LEARNING, WORKING, LIVING, AND HEALTH.

Fine, painstaking care of all the problems associated with the refractive anomalies of the eyes, which are usually corrected by glasses, is an absolute essential. Also 15% to 25% of our patients are in critical need of the orthoptic correction of their non-refractive visual anomalies which are not usually correctable by glasses; this means millions of people are awaiting this care. The professional practitioners are the ones who can and should provide it. The "quickie" does not have the time to give this vitally needed care; professional, thorough, practitioners must justify their position now, that THEY RENDER full, complete vision care.

Every professional practitioner, who is not an active orthoptist, must be made vividly aware of the great opportunities which await us thru the testing and orthoptic rehabilitation of binocularity and that it is precisely this area of visual care which helps greatly to set us apart from the "quickie" and helps the public to know the difference between the services offered by the fine, professional practitioner and the "quickie". Fine vision care can now make a giant step forward, if the majority of practitioners will become truly active in this field. The writer uses the terms orthoptics and visual training as synonyms.

Now that low cost instrumentation has been developed to such a high level of effectivity, orthoptics is not difficult. 95% of those needing orthoptics are non-strabismic, with a prognosis of complete success in practically 100% of the patients. Any professional practitioner can now easily make orthoptics a routine part of his practice, and he needs NO orthoptics room or expensive equipment.

For many years, the writer has presented Lecture-Workshops on Vision Care before many teachers, school administrators, school nurses, school psychometrists, reading teachers, reading consultants; people in special education, as well as optometrists. The response of these people to these workshops has been most enthusiastically favorable; they are very interested and most appreciative of getting this information in Lecture-Workshop fashion. Orthoptics equipment is set up in the lecture hall utilizing Polaroid Vectographs and Polaroid 3-D Tests. Each person in attendance, puts on polaroid glasses and learns the meaning of (a) fusion, suppression, stereopsis and fusional movements by seeing a demonstration of these skills with their own eyes, and (b) the principles, techniques and goals of classical orthoptics. Some of these skills are also explained and demonstrated, by the participants wearing red-green anaglyphic glasses and observing red-green fusion slides.

The lessons learned above, have vividly demonstrated to the writer that AT THIS TIME IN THE HISTORY AND DEVELOPMENT OF VISION CARE, WE SHOULD MAKE AN ALL-OUT EFFORT TO PRESENT LECTURE-WORKSHOPS ON, "THE IMPORTANCE, DETECTION AND EVALUATION OF THE ANOMALIES OF MONOCULAR AND BINOCULAR VISION, THEIR ORTHOPTIC CORRECTION AND THEIR RELATIONSHIP TO LEARNING, WORKING, LIVING, AND HEALTH, in Universities, High Schools and Grammar Schools thru-out America. A special effort should be made to present them

FELLOW OF THE AMERICAN ACADEMY OF OPTOMETRY - DIPLOMATE IN THE CONTACT LENS SECTION

at Teacher's Colleges and Schools of Special Education. Once these people become alert to the great need for these services, they become tremendous allies in the fight against the "quickie", and they will not be satisfied with "quickie" care for themselves, their family, or for any child and especially for those who are not achieving in school. We need not fight this war alone; education, business, industry, unions, the entire general public also have a great stake in this battle; they should, and will, be active allies once they understand the problems. We must get the true facts and the whole story to them.

The Lecture-Workshop Programs the writer suggests for the profession and for Education and other interested groups, are outlined in the sample announcements contained in Topic 2. Please give these materials your most serious consideration and advise as to whether you are interested in my coming to your state and being of service to you (and your colleagues) during the coming year.

To prove to those in attendance, that the belief as to the vast importance of vision in all areas of life is shared by the fine practitioners in both optometry and ophthalmology, the writer quotes freely from the First Chapter of Sir Duke-Elder's book, "THE PRACTICE OF REFRACTION", 8th Edition, (1969), C.V. Mosby Co., U.S.A., J. & A. Churchill Ltd., England. Duke-Elder thoroughly demolishes the arguments of the devaluators of the importance of vision in reading, learning, working, living and health. Please read Topics 2A and 2B (enclosed) of the writer's book. Some quotations from Sir Duke-Elder's great treatise on eyestrain are contained in Topic 2B. A free reprint of Sir Duke-Elder's First Chapter is available from the writer. We must call the above to the attention of education as well as all segments of the public. Eyestrain IS tremendously important and must not, and cannot be cared for under "quickie" standards. In fact, it would do some vision specialists good to read this Chapter very thoughtfully to re-awaken in them the great importance of what they are doing. Visual Anomalies can be, and frequently are, very serious handicaps and deterrents to learning, working, living, and health.

Kindly also read the bottom of page 10 of Duke-Elder's 1st Chapter which reads in part: "To correct a minute error...especially when it is measured in the pathological condition of cycloplegia and transposed to the eye in its normal dynamic state... is to misinterpret completely the whole economy of living organisms".

THE WRITER URGES THE READER TO READ THE ENTIRE DUKE-ELDER REPRINT AND ASSIST IN GETTING AS MANY OTHER CONCERNED PERSONS AS POSSIBLE TO ALSO READ IT. You may also consider sending along a copy of Topic 4 from the 1st Chapter of my book. We must do all we can to demolish the "devaluators" of the importance of vision and present the practice of Vision Care to them in its true light. Many of the facts presented in this book should be sent to educators, industry, unions, and other concerned persons.

It will be a privilege for this writer to work with you and your colleagues toward our common goals of advancing the science and practice of vision care and bringing the utmost benefits to the public from truly high-grade vision care.

Sincerely yours,

Bernard E. Vodnoy

Bernard E. Vodnoy, OD, DOS, FAAO

CHAPTER I -- THE PRACTICE OF ORTHOPTICS AND RELATED TOPICS

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COMMENTS CONCERNING "THE RELATED TOPICS" IN THE FIRST CHAPTER

In the previous editions of this book, the writer restricted himself to the discussion of orthoptics and its techniques. His teaching and practice experiences during the last few years have made him realize the necessity of enlarging the perspective of this book to include several related topics. Therefore, among the subjects he explores are:

(a) the relationship of orthoptics to the concept of complete vision care, and why orthoptics should be a regular part of every vision specialist's practice;

(b) the testing and orthoptics of the non-refractive anomalies of monocular and binocular vision as the principle area of practice which differentiates the thorough, professional practitioner from the "quickie";

(c) the strong influence this area of practice can have in fighting "quickie" low-standard care;

(d) the critical need for Vision Care Lecture-Workshops before vision specialists, education, the general public, etc.

The initial part of "THE PRACTICE OF ORTHOPTICS AND RELATED TOPICS" is devoted to these related subjects; the actual orthoptic techniques the writer utilizes will be found in the latter topics of this first chapter. The reader will find some repetition in some of the topics. This was intentional. Each topic is written as an essay, in itself, so that if a school, association, society, individual, etc., wishes to obtain reprints of any one topic, they will find it fairly complete in itself. The writer welcomes suggestions for changes in any of the topics.

INTRODUCTION

A. SOME OF THIS WRITER'S CONVICTIONS IN THE FIELD OF VISUAL CARE ARE AS FOLLOWS: (a) a critical need exists for clinical books, articles and lecture-laboratory courses which are constantly being re-edited and kept abreast of the times; (b) men with extensive experience should take the time to report that which they have found to be right and clinically applicable, and the courage to speak out and report that which they believe to be misleading and clinically impractical; (c) an experienced practitioner has the right to express his opinions without quoting an "authority" for every point he wishes to make; (d) statistics are important, however, as practitioners we deal in specifics and in the problems of the individual; (e) writings and lectures that outline technique and principles of practice are critically needed; (f) the practice of vision care will progress soundly if a free flow and exchange of such knowledge exists.

This book was written because of the above convictions, and the author attempts to provide some of the answers to the problems indicated above. He, thereby, hopes to be of service to his colleagues by sharing with them the principles and techniques which have worked for him. He believes the special value in his book lies in his having siphoned out many of the lessons he has learned from his long practice which have clinical, practical value.

B. THERE IS NO FILLER MATERIAL, HISTORICAL WRITINGS, OR AUXILIARY MATERIAL on anatomy, physiology, optics, etc. It is assumed that the reader has ample reference material in these latter areas. The text was written in numbered topic form to facilitate its use in practice and as a reference text in colleges or post-graduate study groups. This book should also be of real value to doctors in the training of their assitants, technicians and secretaries. The author welcomes comments of correction, omission, or additions from his readers. The design and resultant cost of many of the available instruments has been a barrier to their application by many vision specialists. This is especially true in the field of orthoptics. Many of the developments contained within the following pages were made to help overcome these barriers.

C. SOME REPORTS FROM OPTOMETRIC PUBLICATIONS, OPTOMETRISTS, EDUCATORS, etc. The intent of the writer in reprinting these reports in this book is NOT to bring praise to himself but to help prove the great need for lecture-laboratory courses on orthoptics with simple, scientifically sound, low-cost devices.

AMERICAN OPTOMETRIC ASSOCIATION JOURNAL February 1968. "The name of Vodnoy is a familiar one to most practicing optometrists as it is quickly associated with practical optometry." March 1968, "It isn't often that the Journal of the A.O.A. is privileged to present the efforts of a noted optometrist on two important subjects in consecutive issues of the publication. Dr. Vodnoy's presentation on the EXAMINATION AND CARE OF THE VERY YOUNG CHILD in the February issue and this paper, SHOULD WE ALLOW THE WEARING OF CONTACTS ALL WAKING HOURS? shows the versatility of one of optometry's foremost authors, lecturers and inventors".

ILLINOIS OPTOMETRIC ASSOCIATION JOURNAL. "The Convention was one of the most successful. Members from all over the state converged on the Congress Hotel making the registration the largest in years. All lectures were filled to capacity. The interest in his (Dr. Vodnoy's) lectures necessitated setting up an extra session to handle the great demand to hear this most capable and enthusiastic exponent of orthoptics. The simplicity of his approach, his method of teaching, and instrumentation required, is creating a great enthusiasm in this specialized field. He is rendering a valuable service to optometry and is today one of the outstanding optometric lecturers".

OPTOMETRIC WEEKLY. "The Washington Optometric Association Convention was held on May 9-10, 1968. Contributing to the success of the meeting was Dr. Vodnoy's seminar which was eagerly attended and highly appreciated by all. His depth of knowledge, and warm personality made the eight-hour course an all time favorite".

PUPIL, PERSONNEL, AND GUIDANCE SERVICES DIRECTOR.."Our Curriculum Coordinator & I attended the Conference on "THE ANOMALIES OF BINOCULAR VISION" held on August 7, 1968 at New Paris School, Fairfield Community School Corp. We came away with much inspiration and enthusiasm and a determination to do a better job in our vision screening and eye care education program. To our pleasure, we found that we are already doing some of the things you suggested; we were glad to be informed of some other procedures by one so obviously expert as you. If we may, we would like to call on you to speak to our teacher group sometime; and may be consulting with you as the school year progresses. Thank you again for a most informative day." Lewis S. Immel, Director.

PROJECT DIRECTOR, NEW PARIS HIGH SCHOOL.."Thanks again for your great contribution to our workshop held at New Paris School. It has become a point of reference for any phase of learning that includes vision. We have had a lot of positive feedback and express a sincere appreciation to you and the insight provided to vision as it related to learning." Herbert T. Tilley, Project Director.

SUPERVISOR ELEMENTARY EDUCATION, DIVISION OF CURRICULUM, STATE OF INDIANA.."After attending your Lecture-Workshop, I'm sold on the importance of this work." Esther Ryan, Supervisor

COLORADO OPTOMETRIC ASSO..."You were tremendous! Your workshop before our Convention was the best thing that has happened to optometry in Colorado in the four and one-half years I have served as Exec. Secretary. There were more satisfied OD's as a result of your outstanding work than we have ever had before. The men want you back for April and this is testimonial of their magnificent acceptance of your abilities."
Mark Schreiber, Exec. Secretary

IDAHO OPTOMETRIC ASSO..."The officers and members of the Idaho Opt. Assoc. have directed me to express our sincere thanks and appreciation for your presence and educational efforts at our annual convention. Your time, knowledge, and personal contributions to the convention added measurably to the success and pleasure of all who attended. For your efforts in our behalf, we are sincerely grateful. We invite you back to Idaho at any time and trust you will so honor us." June A. Hepworth, O.D.

INDIANA OPTOMETRIC ASSO..."I wish to express my gratitude for all of the valuable material you presented at your Indianapolis lecture. Your way of presenting orthoptic techniques can't help but give any practitioner a better understanding of the visual process. I feel that this understanding can only lead to the desire of more doctors to use training as a basic part of their everyday practice." H. E. Bonnet, O.D.

"The Vodnoy Orthoptics course was attended by men from Ind., Michigan and Ohio. Each man had instruments before him and followed the lecture by performing each technique as it was discussed. The application of doing the actual procedure, as instruction is given, far excells any method heretofore presented to our group. For those not familiar with the technique, both the lecture and the instrumentation instruction is adaptable to large or small groups. The great need for this refreshing and illuminating approach to orthoptics is verified by the keen interest and attentiveness displayed by all in attendance." Robert M. Roush, O.D.

WASHINGTON OPTOMETRIC ASSO..."I want to extend my own personal thanks for the wonderful job you did here at Convention. I am sure that both my practice and patients will greatly benefit from having attended your lectures. The many contributions that you have made to optometry are beyond measure, but perhaps the one greatest accomplishment is the inspiration you give the young optometrist like myself who is just starting out in a profession of which we can all be proud." David P. Bennett, O.D.

"Thank you most sincerely for lecturing at the WOA Convention. To my knowledge, this is the longest educational session ever scheduled and you held the interest of those attending extremely well. I heard many favorable comments concerning your lectures and was somewhat amazed to see which individuals attended. It seems others are learning

that the challenge today lies in the optometrist providing orthoptics to his patients. I feel it is the new frontier, even though it is not new to optometry, just many optometrists. I am very glad to see many of our members realize this and actively seek to learn more on V.T. from you. Thank you so much for assisting in making our convention a success." Larry Hedgren, O.D.

MICHIGAN OPTOMETRIC ASSO..."On Thursday, June 16, Dr. Vodnoy held a seminar on orthoptics in Lansing, Mich. Dr. Vodnoy's experienced skill as an instructor of optometric subjects was displayed brilliantly as he had the undivided attention of his 22 students, all practicing optometrists, for 6½ hours of precise, easily understood discussion. His subject matter dealt principally with the most important basic orthoptic techniques, their explanation & application with low-cost training devices. The long period of concentrated interest was possible, because each optometrist had before him instruments with which to learn and demonstrate each technique, & because Dr. Vodnoy spoke informally as one who knows & understands his subject thoroughly, not as from a prepared lecture. Here is a man whose clear thinking has whittled through the aura of half-truths & lofty concepts surrounding visual training to the core of solid, demonstrable facts. Understandably, the participants were close to unanimous in their desire for another Vodnoy Seminar. He is highly recommended to those who find the opportunity to hear him." H.R. Mueller, O.D.

"I am writing to thank you for the excellent results achieved in my office as a result of your course in Orthoptics. It was a revelation to me that physiological optics taught many years ago could be implemented into effective orthoptics that work! Like so many others, I was confused by the endless hocus-pocus surrounding orthoptics. I was able to easily grasp the fundamentals while working your instrument during the course. I thought you would like to know that for the first time I correlate our office orthoptics with home training. The inexpensive instruments purchased by the patient made this possible. Please let me know the next time you are lecturing in Detroit." Dave W. Schiff, O.D.

"The orthoptics course given by Dr. Vodnoy was a tremendous success. We had 47 O.D.'s in attendance. An illustrated set of notes were furnished so that we could follow the lecture quickly & easily. The course covered orthoptics for the non-strabismic & periodic strabismic patient with low-cost devices. From 10:00 a.m. to 8:00 p.m. (with only 1 hr. lunch & 10 min. break at 5:30) the men listened intently for the entire period! In the 8½ hours he spoke, he packed in an enormous amount of material; some 30 different, useful, practical tests & training techniques. At the conclusion of this most unusual and profitable course, Dr. Vodnoy was given a big hand for a job wonderfully done, & for bringing such a large amount of highly useable information. We are sure he will be invited back to Mich. in the future." M. Honeyman, O.D.

"This is to compliment you on a splendid visual training session. There can be no doubt all the men in attendance left feeling that here, at last, are truly practical methods of low-cost home training which saves the doctor considerable time, & offers the patient greater incentive to train himself at home with his own personal training unit. Trainers before us, made the oral instructions much more effective. Many O.D.'s practice little or no V.T. for reasons best known to themselves, but I'm sure all men recognize the fact that there are many "grief cases" which must have their answers somewhere past lens-fitting. While one day is certainly inadequate to cover all aspects of training principles and application, nevertheless a tremendous amount of material was presented and we all recognized the fundamental subjects studied in physiologic optics at college. It is my own personal belief that too much impractical theory was presented in the past, in and out of the schools." C. W. Slesnick, O.D.

THE BRITISH JOURNAL "THE OPTICIAN" June 1968, London, England. "Dr. Vodnoy is one of America's noted optometrists, and a well-known author, lecturer and inventor".

"The Lecture-Workshop was attended by men from Ill., Mo., Ky., Tenn., & Indiana. One of the great bugaboos with orthoptics has been that the initial cost of instruments was so tremendous as to discourage & frighten the neophyte O.D. Dr. Vodnoy's instruments and techniques eliminate this primary obstacle & offers inexpensive instruments and simplified instructions. So often O.D.'s think of orthoptics in terms of strabismics & amblyopes & when attempting to correct such deficiencies & failure comes to them, as it most certainly will in some cases, they get discouraged & drop orthoptics from their service. Dr. Vodnoy strosses the importance of correcting the less severe types of cases where the rate of success is almost 100% if the effort is made. This approach to the field of orthoptics is greatly needed & provides new impetus & inspiration for every O.D. that seeks & responds to the challenge. His instruments & techniques are ones that every optometrist, be he a practicing orthoptist or not, needs to incorporate into the services he offers to the public." W. W. Simons, O.D.

MASSACHUSETTS OPTOMETRIC ASSO..."Your workshop conducted at the Annual Education Program is still being talked about. Not only did we realize a greater attendance than was originally anticipated, but those persons realized what a tremendous impact your methods can & will have upon their practices. Never have I seen a group of practitioners sit so engrossed at an educational meeting & soak up the offerings of the speaker. Your down-to earth style of presenting your subject, combined with the value of your subject, is the answer to your success." Robert Rodman, O.D.

NEBRASKA OPTOMETRIC ASSO..."This was one of our best seminars, Dr. Vodnoy, and all of the credit is yours. Your practical application of some of the basic laws of physiological optics made a lot of sense to me; I'm sure I can speak for my colleagues as well. Your simplified method of presentation made a usually "dry" type of material very interesting, & quite applicable, which you have proven. Actual workshop procedure make it all the more enlightening. You should be warmly commended for your research, development, thought, time & effort in bringing to optometry practical, economical, feasible visual training devices & procedures which can take the place of some of the very abstract ideas presented in the past. Thank you." William J. Higgins, O.D.

OHIO OPTOMETRIC ASSO..."To sum up my impressions of the Vodnoy Visual Training Devices & techniques, I can only repeat what I said to Dr. Vodnoy after a recent instructional session. "You are on the right track". Here is a man who has thought this problem thru to a logical conclusion from the point of view of the average O.D. and has provided us with simple, low-cost efficient means of translating knowledge already possessed but lying fallow into a much needed service, with consequent increased satisfaction to patients of all ages, with increased satisfaction to the practitioner and without the numerous tribulations inherent in rental devices for home training. Dr. Vodnoy's home training devices are the only ones I have seen that provide a means of demonstrating to the patient in concrete, unmistakable form the exact functions being emphasized for his particular benefit. In short, Dr. Vodnoy's approach has been thorough & practical, as are also his lectures on the use & versatility of the trainers. His instructions are precise, with each attending participant handling his own set of training equipment as it is demonstrated by the lecturer. There is no time wasted in theorizing; the lecture is all "meat". Loren Pace, O.D.

"The application of your instrments as low-cost home training units has certainly solved the orthoptic problem for me. Like many others in a busy office, I found myself gradually neglecting this important phase of optometric practice. I realize your time is limited but after attending your recent course in Ft. Wayne, I am convinced that you can render a great service to optometry by conducting similar seminars throughout the country. Carrying out an extended training program would require sacrifice of time & effort on your part but you would be contributing to a wider use of orthoptic techniques that have been neglected by both lecturers and practitioners." Clayton Kiracofe, O.D.

PROFESSIONAL BIOGRAPHY OF

BERNARD E. WOODNOY, O.D., D.O.S., F.A.A.O.

O.D. DEGREE (Doctor of Optometry)-Magna Cum Laude. Illinois College of Optometry 1938

MEMBERSHIPS

AMERICAN ACADEMY OF OPTOMETRY - Fellow. Diplomate in Contact Lens Practice

AMERICAN OPTOMETRIC ASOCIATION - Member

AMERICAN OPTOMETRIC FOUNDATION - Member

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D.O.S. DEGREE (Doctor Ocular Science) AWARDED by the Illinois College of Optometry "For Having Rendered Distinguished Service in the Field of Graduate Optometry, And Having Contributed To Optometric Science Through Outstanding Effort"

INDIANA OPTOMETRIC ASSOCIATION DISTINGUISHED SERVICE AWARD - April 1971 "In Grateful Recognition Of His Many Services To The Profession Of Optometry"

LECTURER

UNDERGRADUATE LECTURER at Illinois College of Optometry 1937 - 1940

UNDERGRADUATE GUEST LECTURER at Illinois College of Optometry and various other Optometry Colleges in the U.S., Canada and Europe, and also at various Universities and Colleges of Education and Special Education - 1946 to present

POSTGRADUATE LECTURER for 42 U.S. Optometric State Associations, Optometric Associations in Hawaii, Canada, Great Britain, Sweden, Denmark, Monte Carlo, Spain, Italy, Belgium, and at various Universities and Colleges of Education and Special Education from 1946 to present

MILITARY SERVICE

MILITARY SERVICE 1941-1946: Optometrist, Training Officer, Teacher of many medical corps subjects in U.S. and Europe

WRITINGS

BOOKS: Author of "Practice of Vision Care, Orthoptics And Corneal Contact Lens Fitting", 5th Ed. Has also had Articles published in many Optometric Journals

JOURNALISM AWARD: Asso. of Optometric EDITOR'S AWARD for Journalistic Excellence - 1964

INSTRUMENTS INVENTED OR DEVELOPED

INSTRUMENTS INVENTED OR DEVELOPED: Polachrome Orthoptic Trainer - Hand-Held Vectogram Holder - Aperture-Rule Trainer - Variable Prismatic Mirror Stereoscope - Tranaglyph Orthoptics - Macular Integrity Tester-Trainer - Fixation Disparity Tests - Free Space Fusion Trainer - MRM Grid Book - Single Oblique Mirror Stereoscope - VATE Trainer - Brewster Stereoscope Testing and Training Targets - Hand-Held Disc Perimeter and Near Point Tangent Field Screeners

ORTHOPTIC LECTURE-LABORATORY COURSES BY DR. B. E. VODNOY MAY 1971 - Sept. 1975

	1971	
May 31	Danish School of Optometry	Copenhagen, Denmark
June 4	Swedish Optometric Society	Malmo, Sweden
June 7-10	Presentation of paper on "Eccentric Fixation" at International Optometric Congress	Amsterdam, Holland
June 12-13	Danish Optometric Association	Horsens, Denmark
June 15-19	Col. of Opt. City Univ. & British Opt. Assoc.	London, England
July 25-27	Mountain States Congress	Denver, Colorado
Sept. 22-25	City University, Dept. of Ophthalmic Optics Post-Graduate & Under-Graduate Courses	London, England
Sept. 26-29	Univ. of Manchester, Dept. Ophthalmic Optics	Manchester, England
Oct. 6	Yorkshire Society of the British Opt. Assoc.	Bradford, England
Oct. 7	University of Bradford	Bradford, England
Oct. 9-10	Swedish Optometric Association	Stockholm, Sweden
Oct. 12	Lecture-Lab for Orthoptists from Stockholm Hospitals	" "
Oct. 13	Conference Health Dept. Stockholm School System	" "
Oct. 17	Danish Optometric Society	Copenhagen, Denmark
Oct. 20-21	British Orthoptic Society & Royal Eye Hospital	London, England
Oct. 26	University of Manchester - Senior Students	Manchester, England
Oct. 27	Northern Society British Optical Association	Manchester, England
Dec. 9-14	American Academy of Optometry Post Graduate Program	Toronto, Canada
Dec. 15-17	University of Montreal, School of Optometry	Montreal, Canada
	1972	
Feb. 17-19	Univ. Kansas, School of Ed. & Kans. Opt. Assoc	Lawrence, Kansas
April 1-8	Hawaii Optometric Association	Honolulu, Hawaii
April 15-16	North Carolina Optometric Association	Winston-Salem, No. Carolina
May 8-10, June 7	I.C.O. Under Grad & Post Grad Centennial Lectures	Chicago, Illinois
July 3-22	Societe' Optometrie D'Europe Summer Post-Grad Courses	Brussels, Belgium
Aug. 30-Sept 1.	Indiana Univ., Division of Optometry	Bloomington, Indiana
Oct. 11	Chicago Central Optometric Society	Chicago, Illinois
Nov. 1-5	Societe' Optometrie D'Europe 6th Congress	Monte Carlo, Monaco
Nov. 6-14	S.O.E. Spanish Optometric Society	Madrid, Spain
Nov. 15-21	S.O.E. Italian Optometric Society	Rome, Italy
Dec. 16-18	American Academy Optometry Meetings	New York, N.Y.
	1973	
Jan. 24	Lake County Society of Illinois Optometric Assoc.	Libertyville, Illinois
Feb. 21-Mar. 7	South Bend, Conferences	South Bend, Indiana
March 19-21	Ill. Col. of Optom., Under-Grad & Post-Grad Courses	Chicago, Illinois
April 1-2	Middle Atlantic States Congress	Richmond, Virginia
Apr. 18, May 9-23, June 6	South Bend Conferences	South Bend, Indiana
July 12-14	Montana Opt. Assoc, Congress	Missoula, Montana
Dec. 6-11	American Academy Meeting	San Francisco, Calif.
	1974	
March 3-10	Pacific College of Optometry	Forest Grove, Oregon
March 11-13	University of California	Berkeley, California
April 24-25	Illinois College of Optometry	Chicago, Illinois
May 2-5	Tennessee Optometric Assoc.	Gatlinburg, Tenn.
Oct. 21-24	Univ. of Alabama Optometry College	Birmingham, Alabama
Nov. 10-12	Heart of America Optometric Congress	Kansas City, Missouri
Dec. 12-17	American Academy Meeting	Miami, Florida
	1975	
Jan. 15-19	Western Illinois University	Macomb, Illinois
Feb. 14-18	Southern Council of Optometry Congress	Atlanta, Georgia
April 12-14	Illinois College of Optometry	Chicago, Illinois
May 3-4	St. Louis Optometric Society	St. Louis, Missouri
Sept. 15	Assoc. for Children with Learning Disabilities	South Bend, Indiana

11/75

LECTURE, TEACHING, WRITING AND CONSULTATION SERVICES RELATED TO VISION CARE

Bernard E. Vodnoy, OD, DOS, FAAO. works in all of the above areas as well as being an active practitioner; at present he is placing his greatest effort in the area of "The Importance, Detection, Evaluation, and Orthoptics of the Non-Refractive Anomalies of Monocular and Binocular Vision, and Their Relation to Learning, Working, Living and Health". He has been of service, for many years, to State, Regional and County Societies, National and State Journals, Optometric Colleges, Education Departments of Universities and Colleges, Teacher and School Nurse Conferences, PTA Conferences, Government and Industry.

I. PROGRAM FOR STATE, REGIONAL AND OVERSEAS ASSOCIATIONS

- PRESENT LECTURE-WORKSHOPS in the above areas. At the option of the Association, Dr. Vodnoy will remain in the State or Country for a few days to also offer the following services:
  - DO T.V. AND RADIO APPEARANCES for the Association, interviews and conferences with representatives from Education, Industry, the news media etc.
  - ACT AS A CATALYST OR LIAISON TO HELP BUILD "WORKING BRIDGES" between the State Associations and concerned persons in the fields of education, government, industry, etc.
  - PROVIDE INDIVIDUAL TRAINING AND CONSULTATION for practitioners by examining "problem" patients with them, to assist in evaluating the existing non-refractive anomalies of eccentric fixation, amblyopia, suppression, strabismus or heterophoria, insufficiencies in the convergent and divergent fusional ranges, inadequacies in the amplitudes of accommodation and convergence etc., in true actual space.
  - HELP SET FORTH THE ORTHOPTIC PROGRAM to be followed to combat the above anomalies and achieve the rehabilitation of normal monocular function and subsequently of normal binocularity.
  - THEREBY, HELP MANY INDIVIDUAL PRACTITIONERS become more active and proficient in this vital field.
  - HELP UPGRADE THE STANDARDS OF VISION CARE by assisting in teaching the public the difference between fine, thorough, vision care and "quickie" care, and why the public must avoid the "quickie". One of the key weapons we have in our fight against the "quickie" is in the care of the non-refractive problems. Since there are a great number of people with whom glasses alone "are not enough", this area of visual care must be vastly expanded.

II. GUEST LECTURING AND TEACHING FOR U.S. AND OVERSEAS OPTOMETRY COLLEGES

- TEACH in both their undergraduate and post-graduate programs.
- WORK WITH STUDENTS WITH CLINIC PATIENTS, to help prepare them for the application of orthoptics when they enter private practice.

III. LECTURE-WORKSHOPS FOR EDUCATION

- HELP BUILD BRIDGES (conferences) between State Associations and Educators.

- PRESENT LECTURE-WORKSHOPS IN UNIVERSITIES AND COLLEGES before students and staffs of Departments of Education and Special Education, teacher and school nurse conferences. Presentations are made in their language to assist them in understanding the vital influence visual anomalies have on learning, working, living, and health. Optimumly, these presentations should be given under the joint sponsorship of the State Association and the University. This presentation is a brief layman course in vision care to give them knowledge of the vocabulary of clinical visual science, and facilitate interdisciplinary understanding and discourse.

- HELP LAY THE GROUND WORK for members of the State Associations to teach in health, science and education classes from grade thru high school and college levels.

IV. WRITINGS AND PUBLICATIONS

- His efforts in this field are in the writing and publication of his book: "THE PRACTICE OF VISION CARE, ORTHOPTICS AND CORNEAL CONTACT LENS FITTING", and the writing of articles for National and State Journals.

V. INSTRUMENTATION UTILIZED

- The instrumentation and slides he utilizes in his workshops are described in his textbook and are listed in Topic 2F, Chapter I of this book. These slides are also available for use by Societies in their educational meetings.

VI. A STATEMENT OF THANKS

- I wish to thank the thousands of my colleagues throughout the nation for the wonderful cooperation and encouragement which they have given me, and many of the profession's leaders throughout the country who arranged for their Association's sponsorship and the details of my workshops. The author has traveled over 150,000 miles during the last few decades to present these workshops.

DISTINGUISHED LECTURE SERIES

"VISUAL HANDICAPS AND THEIR EFFECTS ON LEARNING"

A Lecture-Workshop (A Seven Part, In-Depth, Presentation)

PRESENTED BY: THE DEPT. OF EDUCATION, NOTRE DAME UNIVERSITY, NOTRE DAME, INDIANA.

ADVANCED REGISTRATION REQUIRED - SEND TO: Dr. James M. Lee, Chairman, Dept. of Education
520 Memorial Library, Notre Dame, Indiana 46556

DATE: June 25, 1969
PLACE: Notre Dame Memorial Library HOURS: 1:00 to 5:00 p.m.

LECTURE-WORKSHOP TO BE GIVEN BY BERNARD E. VODNOY, O.D., D.O.S., F.A.A.O.
Author - Lecturer - Optometric Practitioner

. TEACHERS, EDUCATION STUDENTS, SCHOOL ADMINISTRATORS, SCHOOL NURSES, PSYCHOLOGISTS, SOCIOLOGISTS, READING TEACHERS, SPECIAL EDUCATION TEACHERS, VISION SPECIALISTS AND OTHER INTERESTED PERSONS ARE INVITED.

. LECTURER'S BACKGROUND: Dr. Vodnoy has been a graduate optometrist for 35 years; the first 3 years as an optometry college teacher and practitioner, the following 5 years as a military optometrist, and the following 27 years, in addition to his practice, he has presented Lecture-Workshops on vision care for schools and colleges and State Associations throughout the country in 41 states (in some of them several times), as well as in Canada, Hawaii, Great Britain, Sweden, Denmark, Monte Carlo, Belgium, Spain and Italy. He is a highly experienced author, lecturer, practitioner and inventor in the field of visual care.

. THE VAST IMPORTANCE OF EYE STRAIN is covered in the great treatise on eyestrain by Sir Duke-Elder, the world famous ophthalmologist, in the first chapter of his textbook, "THE PRACTICE OF REFRACTION", 8th Edition, (1969). These pages should be read by every school administrator, school nurse, teacher, child psychologist, and the many others concerned, and applied in their work and in their lives. Duke-Elder states "...of all the ailments which interfere with the smooth running of the human machine, eye-strain in one form or another is one of the most common. The importance of the relief of eye-strain in the health and happiness as well as in the economic value of the individual, is now widely recognized. The ill-advised statements of a few should not result in our ignoring the fact that errors of refraction (need of glasses), more specifically of small amount, anomalies of accommodation (focusing) and convergence (turning the eyes inward to look at near), and lack of balance between the extrinsic ocular muscles (eye-turning muscles), are the unsuspected cause of much discomfort. Too often in the diagnosis of such cases the ocular cause of the trouble is neglected, or thought of ultimately as a last expedient when frequently it should have been considered and remedied first". Dr. Vodnoy explains the contents of this first chapter in detail.

. THE NEED FOR THESE LECTURE-WORKSHOPS. Many people in education have become critically aware of the great importance of the effects of vision handicaps on learning; now they urgently need and want, in-depth, factual information on the field of vision care. Dr. Vodnoy answers this need by EXPLAINING AND/OR DEMONSTRATING:

I. THE IMPORTANT TERMS USED IN VISION TESTING AND TRAINING to facilitate the vision specialist, educator and parents working together for the good of the child. We must build discourse between these three groups.
II. THE ESSENTIAL TESTS WHICH SHOULD COMPRISE THE PRIMARY VISION EXAMINATION so the parents and educator will know if the child has had an adequate vision examination.

III. THE SPECIAL TESTS which may also be necessary with many persons being examined in order for the doctor to more fully understand the child's visual handicaps.

DR. VODNOY WILL ALSO EXPLAIN AND/OR DEMONSTRATE:

IV. A. THE RETINOSCOPE..the instrument which enables the vision specialist to determine the amount the eyes are out of focus (with the focusing mechanism at rest) and thereby establish if glasses are necessary and the prescription of the glasses WITHOUT asking the patient any questions. Every child should be examined with a retinoscope as early in his lifetime as possible. i.e., as soon as he is able to sit still on his mother's lap.

B. THE BASIC CAUSE OF APPARENTLY POOR GROSS MOTOR COORDINATION MIGHT be double vision resulting from cross-eyedness or a shifting in depth perception due to periodic cross-eyedness, etc. and not inadequacies in the gross motor system.

C. THE VALUE OF TESTING THE DEPTH PERCEPTION AT THE READING DISTANCE with the Polaroid 3-D Test.

D. THE VALUE OF TESTING BINOCULAR VISION WITH THE RED-GREEN LANTERN.

V. SOME OF THE SERIOUS POPULAR MISCONCEPTIONS ABOUT VISION:

A. We MUST NOT use common sense alone in guiding us in the care of vision, for without the essential scientific facts we can go far astray and make some very serious errors in the care of our children's (and our own) vision.

B. A student who is blind in one eye and has only 20/40 in the remaining eye may have no visual handicap in reading and learning; however, a student with binocular vision, 20/20 in each eye and does not need glasses may be a serious visual cripple!

C. The strength of the corrective lenses does not indicate the strength of the eyes or vision.

D. A perfect spectacle prescription does not insure perfect or comfortable vision.

E. Eye exercises are a great deal more than just rolling the eyes to strengthen the eye muscles.

F. Lenses are not crutches; if lenses are needed, the eyes are more "normal" when the glasses are being worn.

G. Explanation of some symptom-creating problems arising from a tight linkage of the focusing and fusion mechanisms.

H. Detrimental effects on binocular vision, from a need for unequal lens powers for each eye, if glasses are not worn. Explains the need for weak lenses by some people.

VI. ORTHOPTICS (VISUAL TRAINING) AND ITS EFFECTIVITY IN THE CORRECTION OF MONOCULAR AND BINOCULAR ANOMALIES; high cost orthoptic devices are NOT necessary; this eliminates the cost barrier to orthoptics.

A. THE PROGNOSIS IN ORTHOPTICS for most patients is excellent. The chances of success for the trainable cross-eyed person is approx. 75%; for the trainable non-cross-eyed person, it is practically 100%.

B. THE BINOCULAR VISION of every person should be examined, because 15% to 25% of the patients have difficulty with their binocular vision which is causing serious problems.

C. EVERY CHILD SHOULD BE EXAMINED by a vision specialist by 2 yrs. of age or earlier.

D. ORTHOPTICS SHOULD BE INSTITUTED immediately if there is evidence of loss of visual acuity or binocularity regardless of the age.

VII. THE ORTHOPTIC PROGRAM..Instruments will be set up and each person will put on Polaroid glasses, and red-green glasses so that they can actually experience these procedures.

A. The study of false fixation with a false visual center (false macula).

B. The correction of amblyopia (partial sight).

C. The re-learning of normal hand and eye coordination and monocular skills.

D. The establishment of a normal linkage between the eyes.

E. The development of normal binocular vision at the angle of cross-eyedness.

F. The development of depth perception and fusional movements.

G. The testing and training of the reserves of binocular vision.

Distinguished Lecture Series

The Department of Education

University of Notre Dame

VISUAL HANDICAPS AND THEIR EFFECTS ON LEARNING: A WORKSHOP

by

BERNARD E. VODNOY, O.D., D.O.S., F.A.A.O.

Author, Lecturer, Optometric Practitioner

Wednesday, June 25

1:00 P.M. --- 5:00 P.M.

MEMORIAL LIBRARY LOUNGE

Reprint of a poster used by University of Notre Dame

Chap. I
2. C.

NEWS RELEASE OF VODNOY VISION LECTURE-WORKSHOP AT NOTRE DAME UNIVERSITY

On June 25, Notre Dame University, Dept, of Education, presented on its Distinguished Lecturer Series, Dr. Bernard E. Vodnoy, Optometrist, Author and Lecturer. Dr. Vodnoy presented a 4-hour lecture-workshop on "VISUAL HANDICAPS AND THEIR RELATION TO LEARNING" before faculty and post-graduate students from Notre Dame University, St. Mary's College and other interested people from a radius of 150 miles. Dr. Vodnoy explained in depth how poor vision, double vision, and the eyestrain from visual defects creates visual disability, discomfort, stress, tension, worry and pain and thereby are very serious deterrents and handicaps to reading, learning and working in all phases of living by people of all ages. HE ALSO EXPLAINED THAT:

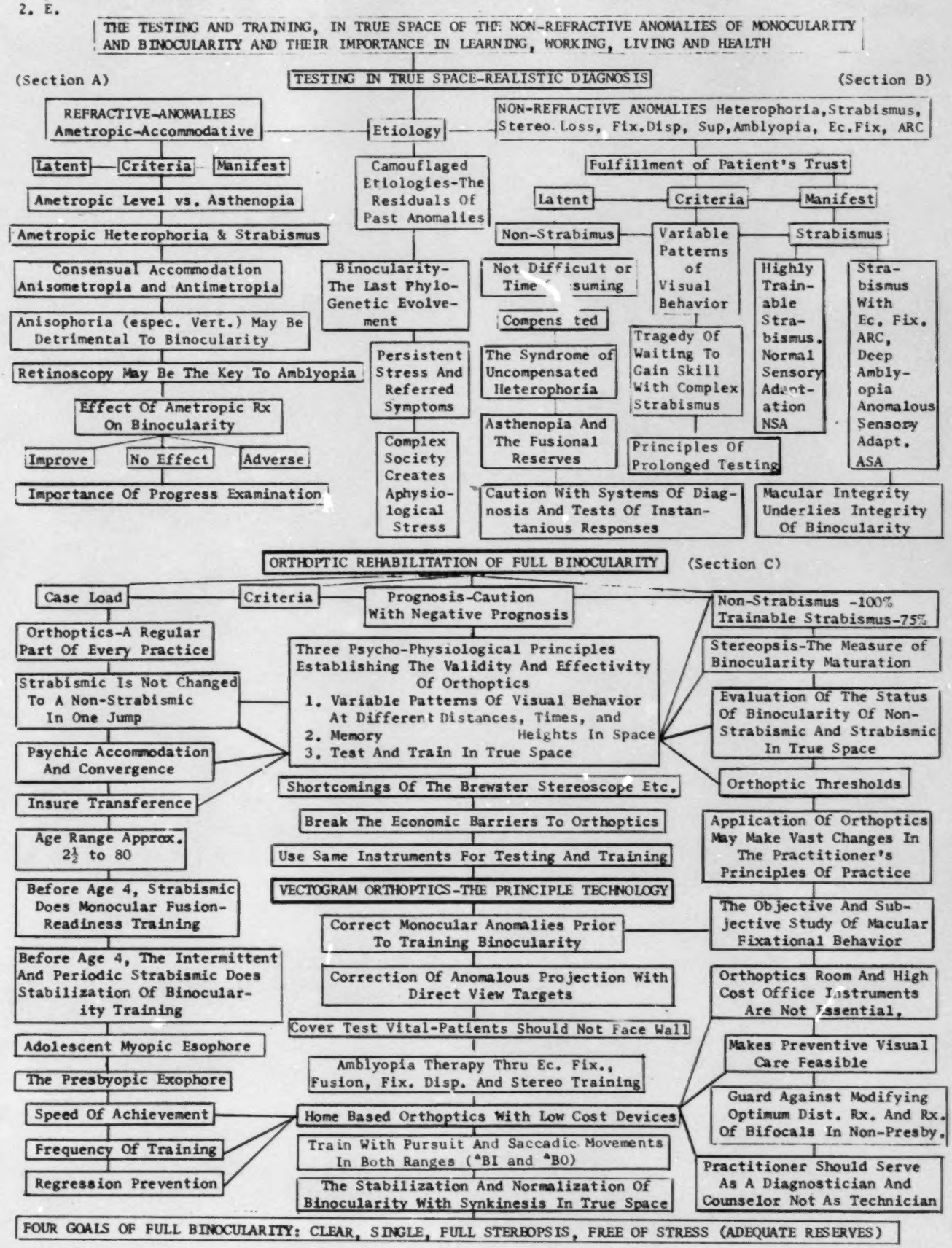
1. The public MUST BE MADE AWARE OF THE EXISTENCE AND TREMENDOUS SIGNIFICANCE OF THE RETINOSCOPE (A) THAT IT IS ONE OF THE MOST VITAL, VALUABLE INSTRUMENTS EVER DEVELOPED FOR THE CARE OF VISION, and that through its use, the examiner CAN determine the optical error of the eye WITHOUT ASKING ANY QUESTIONS; (B) therefore every child should be examined in a professional office, with a retinoscope (and other techniques) as soon as he will sit still on his parent's lap and cooperate, (C) parents MUST NOT WAIT UNTIL THE CHILD STARTS KINDERGARTEN or later, and then depend upon a school screening examination to determine if their child needs visual care. SUCH PROCRASTINATION MAY BE VERY TRAGIC TO THEIR CHILD'S VISION AND LIFE.

2. A VERY IMPORTANT AREA IN THE PRACTICE OF VISUAL CARE IS IN TESTING AND CARE OF THE VISUAL DEFECTS WHICH ARE NOT CORRECTABLE BY GLASSES. Glasses correct deficiencies like farsightedness, nearsightedness, astigmia, need for reading glasses or bifocals, etc. It is very important that if glasses are prescribed, the examination and glasses should be done in accordance with the highest standards. "Quickie" care must be avoided, indeed abolished. Visual Training is usually essential to correct deficiencies like crossed or divergent eyes, amblyopia (lazy eye), suppression, (the act of ignoring one eye when both eyes are open), TENDENCY of the eyes to cross or diverge at far or near or both, lack of ability to achieve fusion or good focus and obtain clear and single vision at various distances.

3. THE NEED FOR ORTHOPTICS (VISION TRAINING) TO CORRECT MOST OF THE VISUAL DEFECTS NOT CORRECTABLE BY GLASSES IS VERY GREAT. In an average practice, approx. 300 patients per year would need orthoptics. Approx. 97% of these would be non-cross-eyed people. Approx. 75% of the young, trainable cross-eyed persons, can achieve straight eyes by doing visual training. There are millions of people who are not cross-eyed but have defects in their binocular vision; thru visual training all of these people can achieve normal single, binocular vision. Dr. Vodnoy also explained what tests should comprise a primary visual examination, as well as many of the special tests. He clarified and corrected several serious popular misconceptions about vision.

4. THE BINOCULAR VISION SKILLS OF EVERY PATIENT SHOULD BE EXAMINED AND EVALUATED, and if any defects are detected they should be explained and corrected if possible. To do less than this is serious neglect. Schools who have been ignoring the defects of binocular vision, either with the cross-eyed or non-cross-eyed patient, should start immediately to help detect these persons and get them under orthoptic care. There are thousands of patients who are wearing their best possible glasses who are suffering needlessly from visual defects which are not correctable by glasses, but which may very likely be correctable by visual training.

5. SCHOOLS AND THE VISION SPECIALISTS HAVE GREAT CHALLENGES IN THIS FIELD AND SEVERAL CORRECTIVE MEASURES ARE URGENTLY NEEDED. Dr. Vodnoy urged that Laboratory Courses in vision be instituted in the elementary schools, high schools, and colleges throughout the land which will illustrate and demonstrate: (1) the normal processes involved in obtaining and maintaining single binocular vision, (2) the defects of monocular and binocular vision, (3) the great importance of detecting these defects, (4) that these defects can be serious deterrents and handicaps to achievement in learning, working and living. These laboratory courses would also serve as a vital vision screening to reveal these defects. They should be used in classes of social studies, health classes, biology, physics, physiology, psychology and education.


THE TESTING AND TRAINING, IN TRUE SPACE OF THE NON-REFRACTIVE ANOMALIES OF MONOCULARITY AND BINOCULARITY AND THEIR IMPORTANCE IN LEARNING, WORKING, LIVING AND HEALTH
(Section A)
TESTING IN TRUE SPACE-REALISTIC DIAGNOSIS
(Section B)
REFRACTIVE-ANOMALIES Ametropic-Accommodative
Etiology
NON-REFRACTIVE ANOMALIES Heterophoria, Strabismus, Stereo Loss, Fix.Disp, Sup, Amblyopia, Ec.Fix, ARC
1
2
Latent
Criteria
Manifest
Camouflaged Etiologies-The Residuals Of Past Anomalies
Fulfillment of Patient's Trust
3
Ametropic Level vs. Asthenopia
Latent
Criteria
Manifest
4
Ametropic Heterophoria & Strabismus
Non-Strabimus
Variable Patterns of Visual Behavior
Strabismus
5
Consensual Accommodation Anisometropia and Antimetropia
Binocularity-The Last Phylo-Genetic Evolvement
Not Difficult or Time suming
Highly Trainable Strabismus. Normal Sensory Adaptation NSA
Strabismus With Ec. Fix. ARC, Deep Amblyopia Anomalous Sensory Adapt. ASA
6
7
8
9
10
11
12
13
Anisophoria (espec. Vert.) May Be Detrimental To Binocularity
Compens ted
Tragedy Of Waiting To Gain Skill With Complex Strabismus
Retinoscopy May Be The Key To Amblyopia
Persistent Stress And Referred Symptoms
The Syndrome of Uncompensated Heterophoria
Effect Of Ametropic Rx On Binocularity
Asthenopia And The Fusional Reserves
Improve
No Effect
Adverse
Complex Society Creates Aphysiological Stress
Principles Of Prolonged Testing
Importance Of Progress Examination
Caution With Systems Of Diagnosis And Tests Of Instantanious Responses
Macular Integrity Underlies Integrity Of Binocularity
14
ORTHOPTIC REHABILITATION OF FULL BINOCULARITY
(Section C)
15
Case Load
Criteria
Prognosis-Caution With Negative Prognosis
Non-Strabismus -100% Trainable Strabismus-75%
16
Orthoptics-A Regular Part Of Every Practice
17
Three Psycho-Physiological Principles Establishing The Validity And Effectivity Of Orthoptics
1. Variable Patterns Of Visual Behavior At Different Distances, Times, and
2. Memory Heights In Space
3. Test And Train In True Space
Stereopsis-The Measure of Binocularity Maturation
18
19
Strabismic Is Not Changed To A Non-Strabismic In One Jump
Evaluation Of The Status Of Binocularity Of Non-Strabismic And Strabismic In True Space
20
21
Psychic Accommodation And Convergence
Orthoptic Thresholds
22
Insure Transference
23
Shortcomings Of The Brewster Stereoscope Etc.
Break The Economic Barriers To Orthoptics
Application Of Orthoptics May Make Vast Changes In The Practitioner's Principles Of Practice
24
25
26
Age Range Approx. 2½ to 80
Use Same Instruments For Testing And Training
Before Age 4, Strabismic Does Monocular Fusion-Readiness Training
VECTOGRAM ORTHOPTICS-THE PRINCIPLE TECHNOLOGY
27
Correct Monocular Anomalies Prior To Training Binocularity
The Objective And Subjective Study Of Macular Fixational Behavior
28
29
30
Before Age 4, The Intermittent And Periodic Strabismic Does Stabilization Of Binocularity Training
Correction Of Anomalous Projection With Direct View Targets
Orthoptics Room And High Cost Office Instruments Are Not Essential,
31
Cover Test Vital-Patients Should Not Face Wall
32
Adolescent Myopic Esophore
Makes Preventive Visual Care Feasible
33
34
Amblyopia Therapy Thru Ec. Fix., Fusion, Fix. Disp. And Stereo Training
35
The Presbyopic Exophore
Guard Against Modifying Optimum Dist. Rx. And Rx. Of Bifocals In Non-Presby.
36
37
38
Speed Of Achievement
Home Based Orthoptics With Low Cost Devices
Frequency Of Training
Train With Pursuit And Saccadic Movements In Both Ranges (ΔBI and ΔBO)
Practitioner Should Serve As A Diagnostician And Counselor Not As Technician
39
40
Regression Prevention
The Stabilization And Normalization Of Binocularity With Synkinesis In True Space
FOUR GOALS OF FULL BINOCULARITY: CLEAR, SINGLE, FULL STEREOPSIS, FREE OF STRESS (ADEQUATE RESERVES)
41

THE OBJECTIVES OF THE VODNOY LECTURE-WORKSHOPS ON THE TESTING OF THE ANOMALIES OF MONOCULAR & BINOCULAR VISION AND THEIR ORTHOPTIC CORRECTION

I. These lecture-laboratory courses are designed to enable each participant to:

1. Gain practical, deeper clinical understanding of the concepts and technology of True-Space Optometry. (See #2E)

2. Utilize testing methods which reveal how patients live visually in their natural environment. (See #21)

3. Experience with their own vision, the technology of making the "Evaluation Of The Status Of Binocularity" in the Non-Strabismic and the Strabismic. (See #21)

4. Make the determination of the level of uncompensated heterophoria, debilitation in each function, establish the orthoptic thresholds and the initial orthoptic exercises. (See #21)

5. Experience the entire road over which patients are taken to achieve complete binocularity free of stress. (See #21)

6. Probe deeply into his own visual mechanism to reveal and understand his own binocular anomalies and how to take himself thru the foregoing 5 steps.

NOTES: A. An excellent plan is to have each man fill out his case record on Form #201-B and bring it to the conference; if he is not equipped to take the polaroid and vectogram tests, we will take them at the conference. The participants will find it helpful to bring a red felt pen and penlight with them.

B. If it is desired to give the men added clinical experience, an additional half day should be devoted to working with actual patients, uncompensated heterophores and trainable strabismics (free of ARC and Ecc. Fix.).

II. Additional Considerations:

1. Participants actually perform many techniques which can be readily applied in their practices.

2. The psycho-physiological background of each technique is explained.

3. Instrumentation and techniques utilized are based upon sound psycho-physiological optics and are designed to eliminate the economic barriers to orthoptics.

4. No particular "system" of examination or diagnosis is taught, instead the practitioners are helped to more fully utilize their training and experience.

5. Pertinent, practical practice management record forms and materials are presented.

Chap. I. INSTRUMENTATION FOR VODNOY LECTURE-WORKSHOPS ON TESTING & TRAINING IN TRUE SPACE
Topic 2.F. OF MONOCULARITY & BINOCULARITY & APPLANATION TONOMETRY (In 26 Stations)

1. LITERATURE (Participants Bring Red Pen)
__"Practice Of Orthoptics" (1st Chap.)
__"Practice Of Vision Care, Orthoptics & Contact Lens Fitting" (Full Book)
__#202A;__#203;__#203A;__#2E;__#2F/#201A;
__#21/#201B
2. VECTOGRAPHIC ORTHOPTICS
__Dual Polachrome w/lamp;__Hand Held Holder
__Single Polachrome w/lamp
__Vectograms #1,2,3,4,5,6,7,9,10,11,12
__Polaroid Goggles; __Vectogram Rules
3. STEREOMETRIC TECHNIQUES
__Polaroid 3D Test;__N.P. Rod Stereo Test
__Howard Dolman Depth Perceptor
4. PHORIA, ANISOPHORIA, TROPIA, ANISOTROPIA
__Plastic Clip-on Δ;__CP12__CP24;_40:_44mm
__Pl.Δ Sets, S4,S6,S8,SS8,MS10,S16,S22
__Pl. Hor. Δ Bars B5,B5R,B6,B7,B15,LB15
__Pl. Vert. Δ Bars B10,B14,LB14
__Occluders:__Blk;__White;__Pirate;__Booty
__Monocular Maddox Phoria Measures
__Hand-Held Red Maddox Rod
__Animal Pencil Top Fixation Trainers
5. ECCENTRIC FIXATION-MACULAR INTEGRITY-OBJ.
__Euthyscope (Macular Tags)
__Euthyscope-Visuscope Fundi Picture
__Transformer; __Flash Booster
__Ophthalmoscope __Neitz Super D;__Other
6. ECCENTRIC FIXATION-MACULAR INTEGRITY-Subj.
(Mono & Bi-Macular Tags)
__#675 Macula Integrity Tester-Trainer
__Haidinger Brush Demonstration Unit
__Multiple Dot Slide; __Snellen Slide
__Multiple Ring Slide
__Reversal Plates
__Blue/Black Goggles on handle;__elastic
__Blue/Blue Frosty Goggles on handle;__elas.
__Blue/Green Goggles on handle;__elastic
7. MONOCULAR LOCALIZATION(Visual-Tactile)
(Straight ahead directionalization)
__Miniature Animals
__Animal Slide With Pointers
__7"long, 3/8" Diam. Tubes
8. OCULO-MOTOR PURSUIT & SACCADIC MOVEMENTS
__Rotator;__Table,__Floor,__Tilt,__Wall
9. VARIABLE ILLUMINATION TECHNIQUES
__Flash Button w/socket & plug
__Manual Flash Controller
10. STRIATED LENS TECHNIQUES
__SGT Clip-ons; __40mm; __44mm.
__SGT Black Nylon Bar;__Metal Bar Holder
__SGT Goggles: __on handle;__w/elastic
11. PHYSIOLOGICAL DIPLOPIA
__N.P. Phy-Dip Trainer
__#14 Lantern
__Phy-Dip Cord/Ball

__Extension Cords

12. TRANSLUCENT SCREEN ORTHOPTICS
(Color Fusion Techniques)
__Translucent Screen Orthopter
__Frosty Goggles on handle
__Translucent Tape
13. TRUE SPACE BINOCULARITY TESTING & TRAINING WITH LANTERNS
__#553 Lantern w/slides; Vecto.__9__11__12
__#443 Lanterns:__Battery;__Cord;__w/slide
__Maculopathy Recording Forms
__#124 Lantern
__AIT After Image Lantern
__Photo Flood Bulb-GE BBI-A
__Worth Four Dot Near Test
__Lanterns;__Fish/Bowl;__Box-X-O
14. REFRACTION
__Streak Retinoscope;__Schematic Eye
__R-G & Polaroid Phoropter Filters
15. VISUAL ACUITY & COLOR VISION TECHNIQUES
__Tumbling Dolls-Directionality Tng.
__Tumbling Pads: __Hand; __E
__Tumbling Books: __Hand; __E
__Tumbling Cubes: __Hand; __E
__Color Vision Test;__8__14__24__38__Wool
__Near Pt. Cards __#1F; __#1BV; __#1CC
__Polachrome Slides: __E; __Snellen
16. VISUAL-TACTILE ORTHOPTICS
__Visual-Tactile 3D, Tng. Board #4
__Visual-Tactile 3D, Tng. Board #6
__Visual-Tactile 3D, Tng. Board #10
__Visual-Tactile 3D, Tng. Board #19
__Visual-Tactile 3D, Tng. Board #20
__Coloring Book, Red Ink
17. TRANAGLYPHIC ORTHOPTICS
__Tranaglyph Kit; Slides #41-46
__Tranaglyph Slide #35
__Black Cover Slides
__Red/Green Goggle;__Fronts;__w/elastic
__Red/Green Goggle;__W/handle;__w/temples
18. APERTURE RULE ORTHOPTICS
__Home Model;__Office Model
19. SEPTUM ORTHOPTER __
20. SINGLE OBLIQUE MIRROR STEREOSCOPE__
21. VARIABLE PRISMATIC MIRROR STEREOSCOPE
__Var. Fris. Mirror Stereoscope w/easel
22. BREWSTER STEREOSCOPE TECHNIQUES__Bioptor
__110-BO;__111-BI;__113-V-1;__125-M
__BO-A;__BI-A;__SS-A;__VT-A;__RRI-CF;
__OS-A;__Cheiroscope Pad
23. VOCATIONAL ORTHOPTICS
__Basketball Dribbling Goggles
24. NON-ELECTRONIC APPLANATION TONOMETRY
__Aplaton Kit w/U-V Case;__A;__NA
25. TANGENT FIELD TESTING(DR=Double Rod)
__Vinyl DR;__Felt,__Roll Up;__DR
__Wands & Recording Charts
26. PERIMETRY __

| | | |

Chap. I.
Topic 3.

THE ABOLISHMENT OF "QUICKIE" VISION CARE IS IMPERATIVE NOW

A. The writer has spent the last 32 years working in many of the fields of vision care. From the vast number of personal experiences gained from examining and caring for the visual problems of thousands of people, his teaching in both the undergraduate and post-graduate fields, his research and development of many vision care instruments, his experiences pertaining to visual problems in education, business, industry, in the military, etc., he strongly feels that it is very urgent that the vision care professions, with the help of the public at large, must now fight with the greatest possible effort to upgrade the standards of vision care, assure everyone of fine, thorough vision care, and abolish "quickie" eye care. "Quickie" eye care has resulted in tragedy for thousands of people by diminishing their ability to learn, work, or live and adversely affecting their health and happiness. The health care professions, education, business, industry, labor, etc., all have a vital stake in this fight. Many children are having difficulty in learning and adjusting to our complex school environment and society; since approx. 85% of learning is achieved thru vision, the examination of children must NOT be entrusted to the "quickie". With the vast majority of people, the ability to work and earn their livelihood is dependent upon their vision; they must NOT entrust the examination of their eyes to the "quickie"; indeed whether we are considering children, adults, or the elderly, NONE OF THEM should entrust the examination of their eyes to the "quickie".

B. To protect the public's health, all our states have passed laws to regulate the practice of the health care professions. These laws, however, only protect against gross violation; they do not protect the public against the unethical practices of those rendering "quickie", low-standard care. Just as labor, business, industry, etc., strive through their codes of ethics and rules to maintain and raise standards in their fields, professional men through the code of ethics and rules of their Association, strive to obtain better care for the public. It has been clearly shown over the years, that when health care practitioners engage in commercial schemes of practice, that the services become seriously degraded in direct proportion to the amount of commercialism applied in the particular practice. Therefore, all health care professions discourage the commercial "quickie-type" practice of their professions.

C. The eyes and vision are very complex mechanisms; they are priceless and deserve the finest of care. A thorough vision examination takes considerable time with many tests performed in a meticulous, conscientious manner. Such an examination takes thirty minutes to an hour; it may even be necessary to see the patient on two or three visits before a proper diagnosis can be made. Generally the examination received in the mass-production type practices is a five or maybe ten minute "quickie". The public should know the difference and avoid such care for their priceless vision.

D. Occasionally, unethical practitioners will work their way into industries, labor, etc., with various schemes to achieve channeling or steering of patients; unfortunately these schemes are very effective in attracting patients to their offices. The mass production achieved, usually results in "quickie", low-standard care and is not in the public interest. Labor and management should be made aware of all of these techniques and concern themselves with stopping them because they may adversely affect the health and welfare of their workers. The public should be careful that they are not being mislead by such schemes.

E. A man who goes to a university to study a health care profession usually does so because of the ideal that he wishes to serve humanity as well as earn a livelihood. He is given the benefit of fine training in our schools, colleges, and universities. He is expected to serve and be a credit to his community. He is expected to be a member of his county, state and national associations and to give freely of his knowledge, time and efforts to advance his health care science. He should support his professional association in its endeavor to obtain the best possible schools, clinics, and faculties by which men can be trained, so that the public will obtain the finest vision care that modern science can achieve for them.

F. The public should question the intentions and practices of the men who refuse to practice in accord with their own profession's established code of ethics and rules of practice, and who will not give of their time and energy toward improving visual science by affiliation with their fellow practitioners in the common endeavor for higher goals. These codes of ethics and rules of practice do not contain any requirements to which any sincere, scientifically-minded practitioner cannot subscribe. They are all set up to help protect the public from low standard care. The public should understand that the commercialized or mass-production practice of a profession is conducive to a much lower grade of care and that the professionalized, "non-quickie" practice of a profession promotes a much higher grade of care. They should be reminded that vision is one of their most precious possessions, and they should be discriminating in their selection of the man to whom they entrust their vision. Visual care is a serious matter not to be taken lightly.

G. Booklets containing the above facts and those given in the enclosed pamphlets should be given the widest possible distribution thru-out the nation. Public Education concerning this vital matter is imperative now!

Chap. I.
Topic 4. "THE IMPORTANCE AND DETECTION OF THE ANOMALIES OF MONOCULAR AND BINOCULAR VISION, THEIR ORTHOPTIC CORRECTION & THEIR RELATIONSHIP TO LEARNING, WORKING AND LIVING."

From: "THE PRACTICE OF VISION CARE, ORTHOPTICS AND CORNEAL CONTACT LENS FITTING" By Bernard E. Vodnoy, OD,DOS,FAAO.

A. BECAUSE OF THE TREMENDOUS CONCERN FOR THE GREAT NUMBER OF CHILDREN WHO ARE HAVING DIFFICULTY LEARNING AND ACHIEVING IN SCHOOL and adjusting to our complex school environment and society, many people in education (and other professions) have become critically aware of the great importance of the monocular and binocular anomalies of vision. While mild or moderate refractive errors, amblyopia, strabismus, suppression, loss of fusion and stereopsis, poor convergent and/or divergent fusional movements, poor results in the tests of the association between accommodation and convergence, may not create an inability to see the printed page, or "prevent" a person from reading, they may very likely cause discomfort, stress, tension, worry, pain, blurred, or double vision, etc., which can be real deterrents to reading, studying and achievement in school. EVERY CHILD SHOULD BE GIVEN THE CHANCE TO ENJOY NORMAL, BINOCULAR VISION, FREE OF STRESS IF AT ALL POSSIBLE. Schools should, therefore, administer at least the following 9 tests:

Vertical Phoria At Far	Stereopsis
Lateral Phoria At Far	Lateral Phoria At Near
Fusion At Far	Fusion At Near
Visual Acuity At Far	Visual Acuity At Near

Color ~~Fusion~~ Vision

These tests can be made quickly and economically with the Bioptor (see Topic 39). Children who manifest deficiencies in these tests should be referred to a vision specialist so that he can determine WHY these children failed these tests, and give the necessary glasses and, if indicated, orthoptics to correct the deficiencies. The demand by the public for the detection and evaluation of the anomalies of vision and binocularity and their orthoptic correction is increasing greatly, therefore, the urgency to vastly expand the practice of orthoptics by vision specialists is one of the major challenges faced by these professions today.

B. THIS GREAT CONCERN TO LEAVE NO STONE UNTURNED TOWARD ASSISTING CHILDREN who are experiencing difficulty in school is vital and fortunate. However, as a result, many persons from several disciplines are attempting to establish an evaluation of the importance of vision in living and achieving in the school environment. Many people in influential positions, carrying high academic degrees, who are not trained and experienced vision specialists, and have no <u>clinical</u> understanding of the role which anomalies of vision play in this very critical area, are making statements in the news media, in professional journals, in lay journals and in books being published for distribution to the public in which they are seriously questioning or devaluating the importance of the anomalies of vision in this crucial area. They repeat such writers as Crosby (a pediatric-neurologist of fine repute) and Liston's ill-advised, mis-leading statement in their book, "THE WAYSIDERS", that "There is, in fact, no eye defect which prevents a child from reading." Statements such as these, are of very great concern to the thorough-practicing vision specialists who spend their lives struggling to find the solutions to the visual problems of millions of people who are experiencing discomfort, stress, tension, worry, pain, etc. from anomalies of vision. The promulgation of such thinking can cause thousands of people to neglect their eyes and vision; NEGLECT in the field of vision care is already one of our most serious problems in the care of our people. While visual anomalies may not "prevent reading", they can be (and are) VERY SERIOUS DETERRENTS AND HANDICAPS TO READING, LEARNING, WORKING & INDEED IN ALL PHASES OF LIVING BY PEOPLE OF ALL AGES.

Chap. I
4. Cont'd -"The Important, Detection, and Evaluation of Monocular and Binocular Vision"

C. This book contains a reprint of the First Chapter of "THE PRACTICE OF REFRACTION", 8th Edition, 1969, by the ophthalmologist Sir Stewart Duke-Elder, who is recognized as one of the world's greatest authorities in the field of vision care, visual science and ophthalmology. In this 1st Chapter, he thoroughly demolishes the arguments of the "devaluators" of the importance of vision. Duke-Elder thoroughly explains why the determination of the prescription of the spectacles must be done with the greatest care and accuracy, for even small errors can cause considerable visual disability and discomfort, and because optical errors are frequently the basic cause of the non-refractive vision anomalies (amblyopia, crossed eyes, etc.). Teachers, school administrators, school nurses, school psychologists, reading consultants and reading teachers, ophthalmologists, optometrists, ophthalmology and optometry students, physicians, neurologists, and general practitioners, as well as the members of the professions of osteopathy, chiropractry, etc., should study Duke-Elder's first chapter very carefully and GIVE HEED to the vital advice which Sir Duke-Elder sets forth within them. There are thousands of people, both adult and children who are suffering needlessly. If the very sage advice of Duke-Elder were heeded, the benefits which these thousands of people would accrue would be enormous. Also, ideally the non-vision specialists enumerated above should attend Lecture-Workshops on the anomalies of vision in order to gain a broad understanding of this clinical material.

D. SOME QUOTATION FROM SIR DUKE-ELDER"S GREAT TREATISE ON EYESTRAIN. "...of all the ailments which interfere with the smooth running of the human machine, eyestrain in one form or another, is one of the most common. The importance of the relief of eyestrain in the health and happiness as well as in the economic value of the individual is now widely recognized... Eyestrain may create a sense of confusion and a temporary blurring of vision, the letters when reading appearing to run together, the eyes gradually become tired and the lids heavy, while a sensation of weariness or drowsiness makes itself progressively felt and renders continued attention difficult or impossible, and the individual is tempted to give up in annoyance or exhaustion. The commonest symptom associated with eyestrain is headaches; this occurs in a multitude of varieties; in its incidence it may be permanent or periodic, or it may come on in quite irregular intervals; it may or may not be definitely associated with the use of the eyes;...it frequently comes on in the morning after a night's rest and sleep;it may have all the characteristics of a typical attack of true migrane...it may be completely incapacitating...it may suggest organic central nervous disease. No case of obscure headache should be treated on general medical lines without first eliminating the possibility of eyestrain... Eyestrain may cause...habit spasms, tics...tachycardia, gastric disturbances...anorexia, mild dyspepsia...dizziness, disorientation, nausea, vomiting, prolongation of neurasthenic states, nervous prostration, irritability of of temper, insomnia, depression, loss of much of the verve and vivacity of life."

E. THE SOUND, THOROUGH PRACTICING VISION SPECIALIST does NOT hold that the correction of visual anomalies are the panacea for the cure of the non-achiever, or the disabled learner, etc. However, the writer has never met any one in education (or out) who will quarrel with the position that everyone should be given the opportunity of enjoying normal visual acuity, and normal single binocular vision, free of pain in all its phases, if it can be attained. We, as vision specialists are NOT being asked to make any guarantees that the correction of visual anomalies will turn a non-reader into a reader or a non-achiever into an achiever. The achievement of maximum visual acuity with completely normal binocular vision are worthwhile goals in themselves. Once these goals are realized, whatever benefits are obtained (and there will be many, real worthwhile ones) will be more than adequate reward for the effort and expense that are expended in their achievement.

F. EVEN IN DISCUSSING THIS PROBLEM WITH MANY VISION SPECIALISTS, THE NON-VISION SPECIALIST MAY NOT GET FACTUAL INSIGHT INTO, AND EVALUATION OF, THE SIGNIFICANCE OF THE ANOMALIES OF VISION because unfortunately, we have in the field both fine, thorough practitioners and "quickie" practitioners. The thorough, professional examiners, may only accomplish 6 to 8 complete vision examinations in a day. The "quickie" examiner will do as many as 4 to 6 per HOUR or more! Therefore, the "quickie" MUST bypass doing meticulous refractions and even, indeed, taking any case history; he will, therefore, NOT BE COGNIZANT AND ABLE TO EVALUATE the discomfort, pain or other disabilities the person is suffering, nor evaluate the importance of these symptoms as deterrents or handicaps to learning, reading, working and living. Unfortunately, many of these people are VERY VOCAL and in a position to mislead and mistreat thousands of people.

G. THE PUBLIC MUST BE MADE AWARE OF THE EXISTENCE AND TREMENDOUS SIGNIFICANCE OF THE RETINOSCOPE. (A) THAT IT IS ONE OF THE MOST VITAL, VALUABLE INSTRUMENTS EVER DEVELOPED FOR THE CARE OF VISION, and that through its use, the examiner CAN determine the optical error of the eye WITHOUT ASKING ANY QUESTIONS; (B) that therefore, every child should be examined in a professional office, with a retinoscope, and other necessary instrumentation, as early as possible. With many children, worthwhile findings may be obtained even at one year of age. (C) that parents MUST NOT WAIT UNTIL THE CHILD STARTS KINDERGARTEN or later, and then depend upon a school screening examination to determine if their child needs visual care. SUCH PROCRASTINATION MAY BE VERY TRAGIC TO THEIR CHILD'S VISION AND LIFE.

H. ONE OF THE MOST IMPORTANT AREAS OF PRACTICE THAT DIFFERENTIATES THE FINE, PROFESSIONAL PRACTITIONER FROM THE "QUICKIE" PRACTITIONER IS IN THE TESTING AND CARE OF THE NON-REFRACTIVE ANOMALIES OF MONOCULAR AND BINOCULAR VISION. By non-refractive anomalies, we mean deficiencies other than farsightedness, nearsightedness, astigmia, need for reading glasses or bifocals, etc; they include deficiencies like crossed or divergent eyes, amblyopia (lazy eye), suppression, (the act of ignoring one eye when both eyes are open). TENDENCY of the eyes to cross or diverge at far or near or both, lack of ability to achieve fusion or good focus to obtain clear and single vision at various distances.

I. THE NEED FOR ORTHOPTICS TO CORRECT MOST OF THE NON-REFRACTIVE ANOMALIES OF VISION IS VERY GREAT. In a practice which averages 7 examinations per day, a conservative estimate would be 15% or approx. 300 patients per year would need orthoptics. Approx. 95% of these would be non-strabismics. A strabismic is one whose eyes are actually crossed, divergent or one turned above the other; non-strabismics are those whose eyes ARE NEITHER crossed, divergent or one turned above the other, however, in many their eyes tend to go out of balance seriously. With orthoptics, in approx. 75% of the strabismics, the eyes can be straightened and useful binocular vision achieved without surgery. In non-strabismic orthoptics, fine results can be achieved in practically 100% of the cases; it is only a matter of proper techniques and application.

J. THE BINOCULAR (TWO-EYED) VISUAL SKILLS OF EVERY PATIENT SHOULD BE EXAMINED AND EVALUATED, and if any anomalies are detected they should be explained and corrected if possible. To do less than this is serious neglect. Schools or vision specialists who have been ignoring the non-refractive anomalies of monocular and/or binocular vision, either with the crosseyed or non-crosseyed patient, should start immediately to detect these persons and get them under orthoptic care by a vision specialist. There are thousands of patients who are wearing their best possible lens prescription who are suffering needlessly from non-refractive visual anomalies.

K. THE SCHOOLS AND THE VISION SPECIALISTS HAVE GREAT CHALLENGES AND OPPORTUNITIES IN THE DETECTION AND EVALUATION OF THE ANOMALIES OF MONOCULAR AND BINOCULAR VISION, THEIR ORTHOPTIC CORRECTION AND THEIR RELATIONSHIP TO LEARNING, WORKING AND LIVING. We can and we must meet them! HERE ARE SOME OF THE THINGS WE SHOULD DO:

1. Work to keep increasing our skill in the understanding, testing, care and orthoptics of the anomalies of monocular and binocular vision.

2. Institute in our school systems the screening of all students for binocularity, with the Red-Green Suppression Lantern and/or the Polaroid 3-D Tests, as well as screen the near and far visual acuity, amplitudes of convergence and accommodation, and balance of the extrinsic ocular muscles at far and near. If at all possible, screening with the Retinoscope by a vision specialist SHOULD BE DONE as well as screening of the positive fusional convergence movements and fusional divergence movements at near.

3. Institute laboratory courses on vision in the elementary schools, high schools, and colleges throughout the land which will illustrate and demonstrate: (a) the various types of refractive errors, and their significance, (b) the normal processes involved in obtaining and maintaining single binocular vision, (c) the non-refractive anomalies of monocular and binocular vision, (d) the great importance of detecting these anomalies, (e) that these anomalies can be serious deterrents and handicaps to achievement in learning, working and living.

4. Help set up and conduct "LECTURE-WORKSHOPS ON THE ANOMALIES OF VISION" in our school systems throughout the state. See Topic 2, Sample Announcement For Use By Education.

5. Vision specialists must be prepared to FULLY care, orthoptically as well as refractively, for the children who will be sent to us as a result of such far-reaching, thorough public education and vision screening. We must also be cognizant and prepared for the flood of adult patients, with such amonalies, which must inevitably follow.

REPORT OF SOME HIGHLY SIGNIFICANT EXPERIENCES WITH EDUCATION

A. This is a report of some highly significant experiences the writer had, during 1969, in the field of education, which should be of great interest to many of his readers. It starts with his being invited to lecture, under Federal Funds, to a group of educators who were assembled for several weeks in a rural community in the northeast part of the State to study the problems of education in rural America, and come up with suggestions for their improvement or solution. The Federal government allocated $50,000 to this group of 65 educators, school administrators, school nurses, school psychologists, reading teachers, special education teachers, etc., to undertake this work. The writer was given the task of going over the area of vision and its problems to help these people properly place vision in the entire scheme of their considerations. The Lecture-Workshop which he presented and titled "Visual Handicaps and Their Effects on Learning", was a 7 part, in-depth presentation. The outline which he followed in making this presentation will be found under Topic #2 of this book.

B. As he was making the presentation, he noticed a lady in the front row making voluminous notes; she was extremely attentive to what he was saying and doing, for the full 7 hours of his presentation. At the close of the workshop, she sent him a note and said, "I am sold on the importance of your work!"; in effect, what she was really saying was "I am sold on the importance of modern, professional, thorough, complete vision care and what it has to offer education and the children of the nation." She later introduced herself to the writer and told him she was the Head of Elementary Education for the State, that she worked out of the State Office, that she had been an Assistant Professor of Education at the State University for many years and that she had attended a great many conferences on vision and its relationship to education but had never quite heard one that gave her the depth of understanding she achieved from his workshop. She attributed this to the several reference sheets which the writer provided, which the participants could take with them, to the fact that he set up an orthoptics room utilizing Polaroid Vectograms and had each person put on Polaroid glasses, and he was thereby able to show them the meaning of normal binocular vision with depth perception, of suppression, of the testing and training of the convergent and divergent fusional movements, etc.; she felt this kind of presentation was of immense value. The people in attendance were very enthusiastic and it made this writer recognize what a tremendous tool Lecture-Workshops for education can be for the cause of fine vision care, that we should be going to education to visually show them what needs to be done in the field of vision care in the schools, what we can do in providing this care, and that the Polaroid Vectogram is the ideal method for this teaching program.

C. A few months prior to the writer making this presentation, a large and important conference was conducted at one of the Universities in the upper northwest part of the State, and a large number of educators attended. They invited some specialists to discuss the problems of vision, learning disability, dyslexia, etc. The report which this writer received was that, about all most of the participants carried away with them was the concept that there were thousands of children in the school system wearing weak powered lenses which had very little value to them and that they would be a great deal better off if they would throw away these weak powered glasses; they completely overlooked the importance and relationship of consensual accommodation to anisometropia, and the resultant detrimental effects on binocularity; they neglected to explain the importance of moderate

astigmia in causing asthenopia; they did not discuss fusion, suppression, stereopsis, positive and negative fusional convergence and divergence; they seemed to conclude that the correlation between vision and learning, reading, etc., was low indeed, that reading and learning disability are solely based on biological and/or neurological etiologies, that the connection between vision and learning was being over emphasized, and that we need not be greatly concerned about vision as an important cause of reading or learning disability. Later, a similar conference was held in the center part of the State and educators from all over the State attended. They had a very large audience; the presentation was very similar to the one given in the upper northwest part of the State and the conclusions were very much the same; from what this writer could gather, the educators went away from these conferences with a feeling of emptiness and felt as though they did not obtain very much in the way of added information or knowledge as to what is the relationship between Visual Handicaps and Learning Disability. The head of elementary education referred to above, asked the writer if he would make a Lecture-Workshop presentation (like he gave in the northeast) under the auspices of the State Department of Education, Elementary Division. In early Fall, 1969, he made the same presentation before approximately 115 educators. The Head of Elementary Education introduced him to the audience and the introduction went somewhat as follows: "Many of you attended the conference, a few months ago, in which the importance of Visual Handicaps to Learning was considerably devalued; we feel that you should hear all sides of the story, and so we have invited Dr. Vodnoy to make a presentation which we find to be vastly different from what we received a few months ago. We want you to hear both sides of the story and then make up your own minds as to which approach has the greatest promise, and which approach educators should follow in the area of vision in our future efforts with our children."

D. In responding to this introduction, the writer told them that he wanted to make it clear at the outset that his presentation was not intended as a portrayal of a controversy between optometry and ophthalmology, that the differences existing in the field of vision care are between those rendering thorough, complete, fine vision care and the "quickie" practitioners, that there is no basic difference between the science followed by the fine optometrist and the fine ophthalmologist, that contrary to the "Waysider-Type" of evaluator (the devaluators), many men in ophthalmology do place very high importance on the relationship of visual handicaps to learning, working, living, etc. The writer read to them, direct quotations from Sir Duke-Elder in which this world famous ophthalmologist stresses the vast importance of eye-strain in all phases of life. Duke-Elder states: "That of all the ailments which interfere with the smooth running of the human machine, eye-strain, in one form or another, is one of the most common. The importance of the relief of eye-strain in the health and happiness as well as in the economic value of the individual, is now widely recognised. The ill-advised statements of a few should not result in our ignoring the fact that errors of refraction, more especially of small amount, that anomalies of accommodation and convergence, and a lack of balance between the extrinsic ocular muscles, are the unsuspected cause of much discomfort. Too often in the diagnosis of such cases the ocular cause of the trouble is neglected or thought of ultimately as a last expedient when frequently it should have been considered and remedied first."

E. The writer then went thru his Lecture-Workshop; he explained the great importance of the macula and had each person put on blue glasses and see the projection of his macula by the use of the Haidinger Brushes, and then explained false macula and amblyopia. He had them put on polaroid glasses and measure their depth perception, view split-slide vectograms, pull the vectograms into prism base out and prism base in ranges, and experience positive and negative stereopsis. He had them put on Red-Green glasses and experience anaglyphic approaches to the investigation of binocularity and suppression. As they were going thru the demonstrations, 20% to 25% of the people in attendance became aware of many vision anomalies which they had in their own binocular vision. At the close of the workshop, 4 school nurses, who work out of the State Office, came to him and said: "Dr. Vodnoy, you are far too conservative in your estimates of the vitalness of your topic; you said that 15% to 25% of the patients have non-refractive anomalies needing orthoptics. Well here we are, 4 nurses who have spent close to 20 years each in the field of visual screening and working in the schools as school nurses and each of us have children of our own who have suffered very seriously with binocular visual problems and who have never been given fine, adequate orthoptic care for their visual problems." A school psychologist questioned the writer by saying: "Where have you people been? Why haven't you been coming to education, and why haven't you been showing and demonstrating all these matters to us for many years? I feel that the presentations to Education on visual problems have been far too elementary. Your kind of presentation should be made wide-spread thru the whole country." Subsequently, the writer had the opportunity of presenting a Lecture-Workshop at the Purdue University Achievement Center for Children, and at Ball State University, Department of Education; he had 65 people from their faculty and the other faculties of psychology, etc., and they gave him a full day to make his presentation. At the close of the presentation, several people came up to him and said, e.g., "I've been a professor to education for 20 years and I should have had this information 20 years ago; I would have looked at my children and their problems a great deal differently than I have. Where have you people been, why haven't you been coming to the schools of education and setting forth in detail, as you are doing now, in-depth information about vision, and visual handicaps? We need an exchange of knowledge and must take your information, findings and clinical knowledge and apply them in our work with our children."

F. Information concerning these Lecture-Workshops has gradually filtered out thru the State and the writer is getting invitations to make additional presentations. For example, last Fall he offered to give a similar lecture and presentation at South Bend, and with only about 3 weeks notice, he had 50 educators, school administrators, school nurses, school psychologists, reading teachers, etc., taking a full day Lecture-Workshop with him. They were from South Bend and adjoining cities. One School Superintendent got a school bus and brought over a full bus load of people from his educational system. Education is extremely interested in what we have to say and they want thorough, in-depth, presentations; they want to see these visual processes set forth visually as much as possible and they want in-depth carry-away literature. At this time, in the development of vision care, this is one of the vital avenues we must pursue with the greatest amount of vigor that we can marshal.

G. The writer, therefore, urges you to go carefully thru his "PRACTICE OF ORTHOPTICS AND RELATED TOPICS", give serious consideration to the outline of the services

which he has been offering to the State Associations, give consideration to the impact which all this may have on the abolishment of the "quickie" eye-examiner. Please give attention to his Topic #4 in which he evaluates the importance, detection and evaluations of the anomalies of monocular and binocular vision and their orthoptic correction and their relationship to working, learning and living; help set up Lecture-Workshops on visual handicaps in relation to learning throughout your State and entire school system, and especially in all your colleges and universities which have departments of education and special education. We must present these facts to the public, the professions of education, the general medical practitioner, the osteopath, the pediatrician, the neurologist, etc.

H. Please read Topic #8 of this writer's book in which he points out the tremendous necessity of making orthoptics a part of every vision specialist's practice, that orthoptics is not difficult, that the equipment need not be costly, or expensive, that we do not have to have an orthoptics room, that the prognosis is excellent and that the number of patients needing orthoptics is very great in number. This is the area in which fine, professional vision care can shine, as one of the leading health care professions of the nation. Please give consideration to the physiological and psychological basis for the validity and effectivity of orthoptics which are outlined in Topics 7, 8 & 10 in which he points out that a practitioner many make vast changes in his principles of practice when he makes orthoptics a regular part of his procedures, that he will largely discontinue prescribing bifocals for the non-presbyopic esophores. The effectivity of orthoptics on the non-strabismic patient can be very fast. After we have painstakingly determined the ideal acceptable distance lens prescription, as most of us do, we must not be too fast to hack away at it by any system of case analysis, because the blur, break and recovery points, the phorias, etc., can be too easily changed by orthoptics. Please give consideration to the changing attitude about orthoptics, by many of the leaders in medicine and optometry and the establishment of large orthoptics clinics in some of the largest medical and optometric schools in the nation. The time is ripe, right now, for us to make some vast, giant steps. Let's all make an all out effort to meet the challenges which are being presented to us at this time.

INCLUDED IN THE PRESENTATION:

Chap. 1
Topic 6

THE FIRST CHAPTER OF

THE PRACTICE OF REFRACTION

8th Edition (1969)

BY SIR STEWART DUKE-ELDER

EYE-STRAIN

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